ANNUAL REVIEW NUMBER

Rock Products

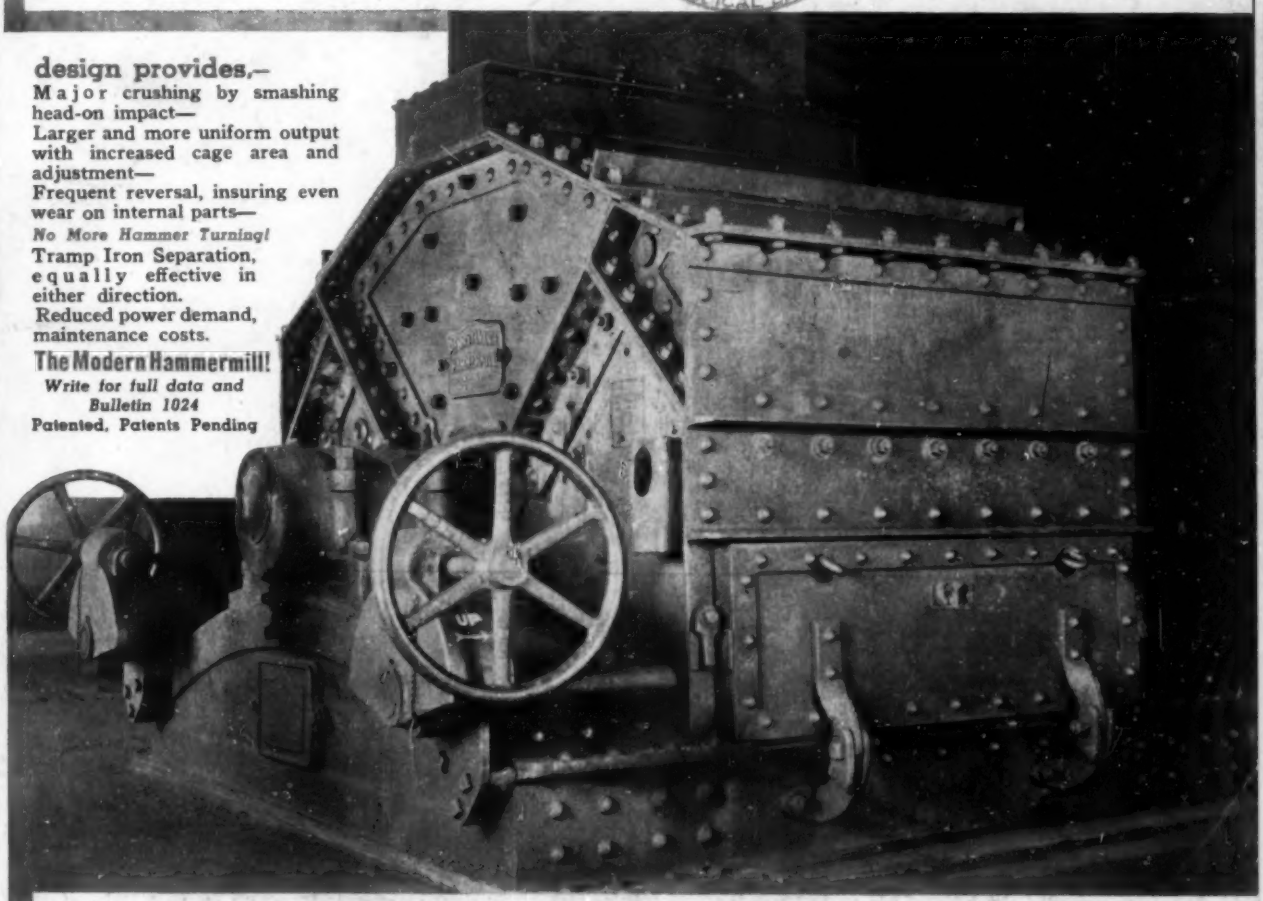
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CEMENT and ENGINEERING NEWS (Est. 1896)

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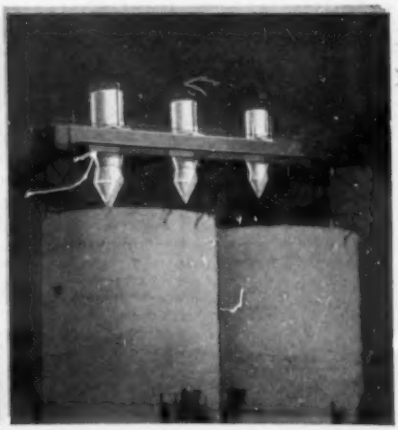
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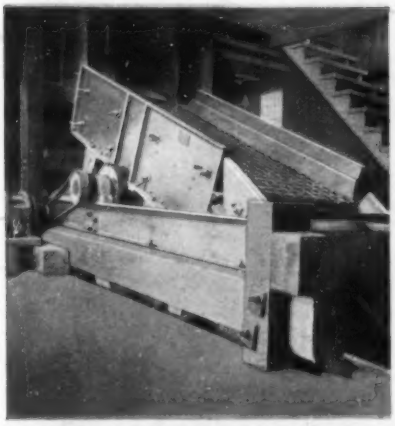






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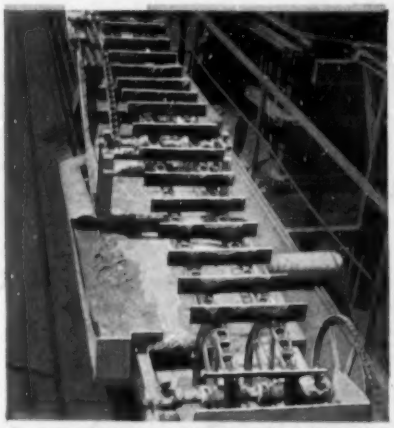
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Founded 1896 Est. 1918

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(PUBLISHED MONTHLY)

RECOGNIZED THE WORLD OVER AS THE LEADER IN ITS FIELD

January, 1937

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"CHANGE CARS"
for a silent ride on rubber springs

A typical example of Goodrich development in rubber

Discomfort and noise are poor salesmen. The street car industry found that out, as they saw their business slipping away.

Then heads of the industry got busy, employed engineers, developed a new car.

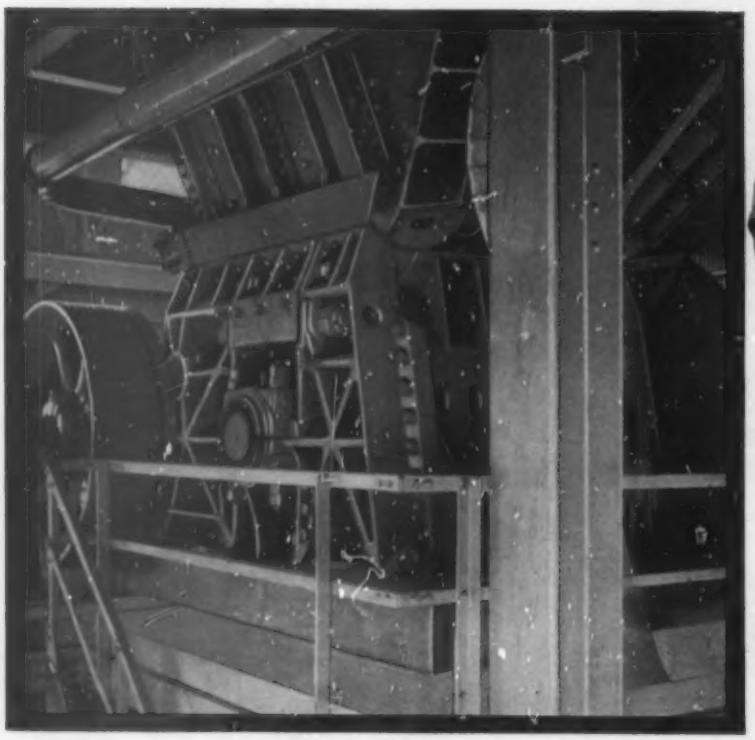
Among the chief advantages of this new car are comfort and silence—both secured by Goodrich rubber. Developed by cooperation of engineers representing Goodrich, the street railway industry and a car-truck manufacturer, a rubber spring takes the place of two springs (coil and elliptical) used before. Mounted in shear, this rubber spring cushions the entire car body. There is no jerk, no sway, and noise is almost completely eliminated even at the new high speeds. You can read or talk in this car as comfortably as at home; you can stand at the curb with your back to the street, and scarcely hear it when the car goes by. Soon these new cars will be in service in many cities, increasing street-car travel and profit.

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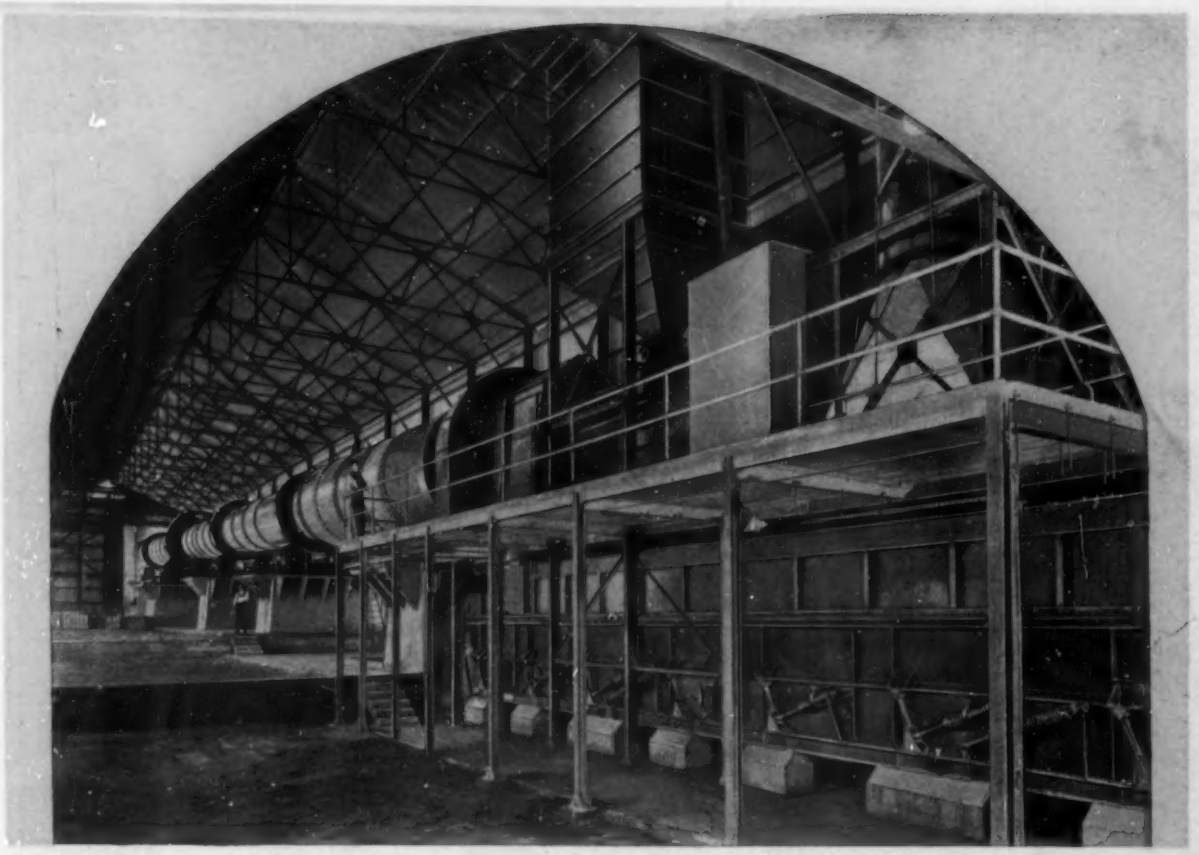
Texaco Crusher Lubricants, whether oil or grease, are the result of constant, close cooperation with the makers of crushing equipment. Their use will bring you new freedom from overheating bearing troubles.

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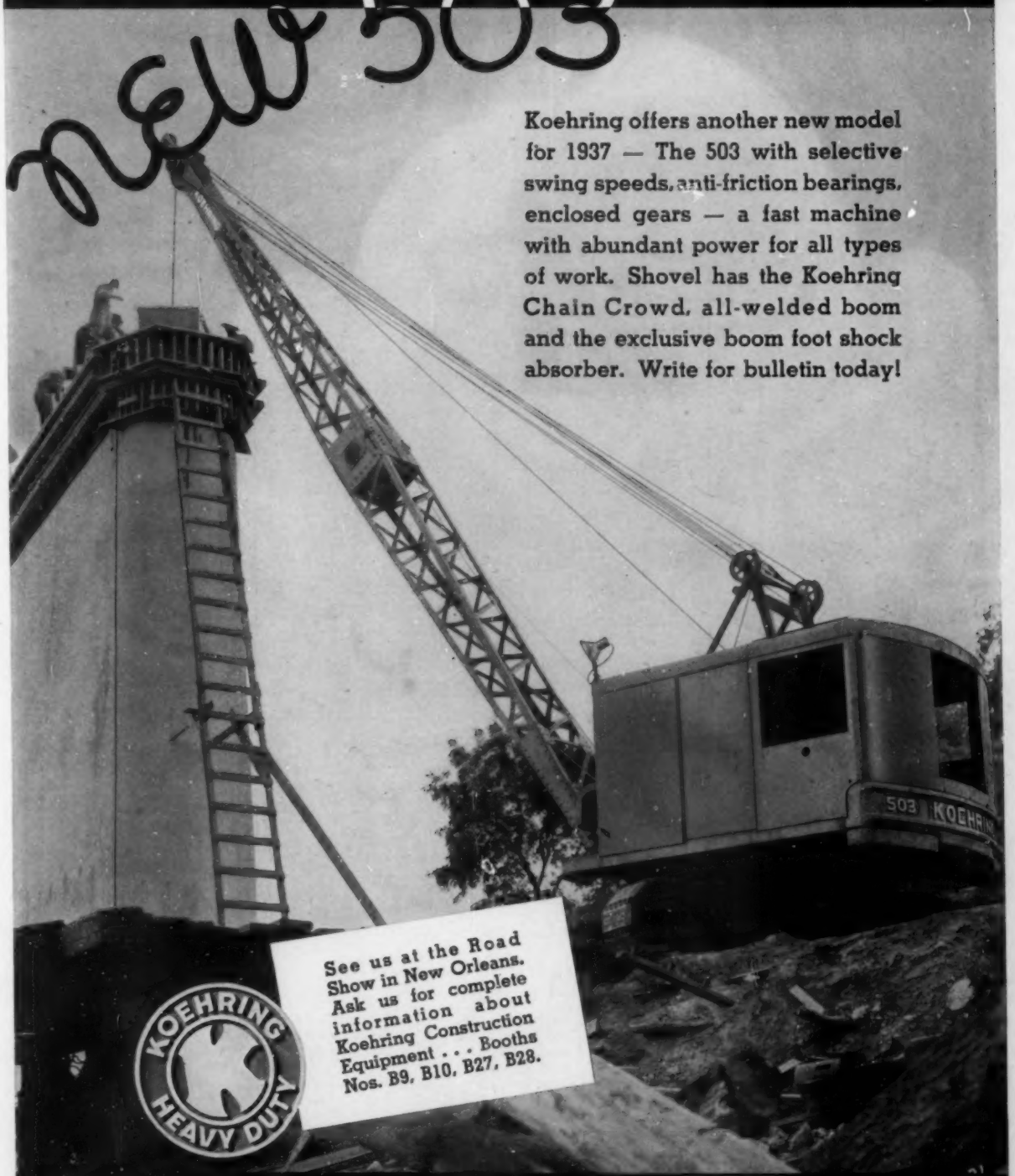
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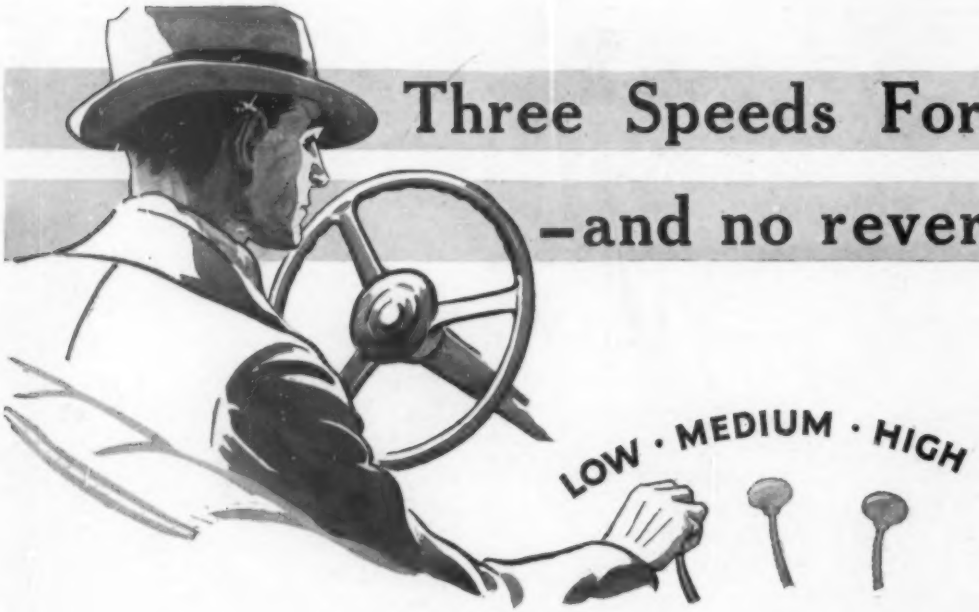
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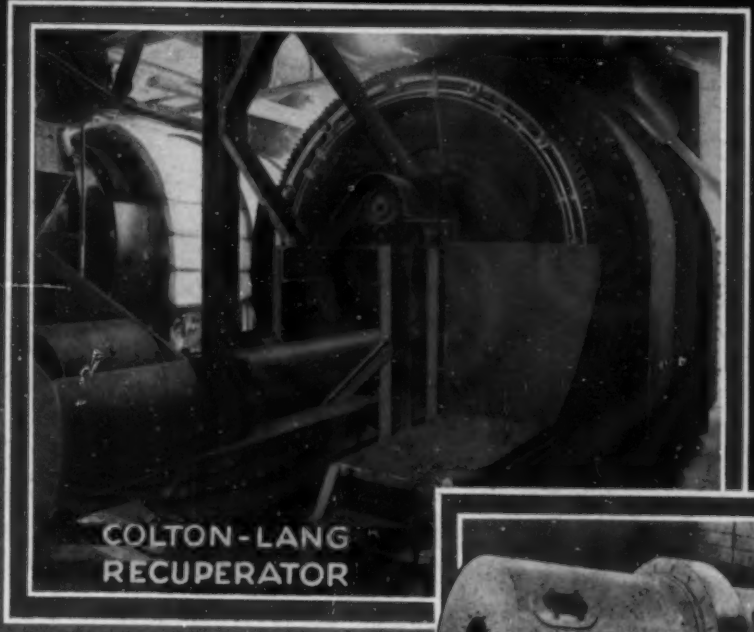
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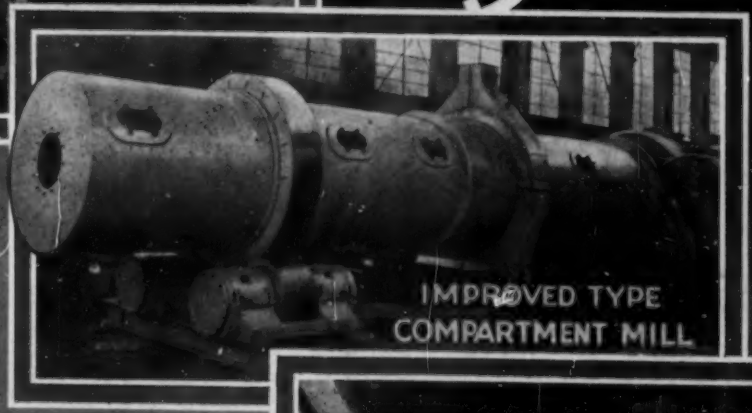
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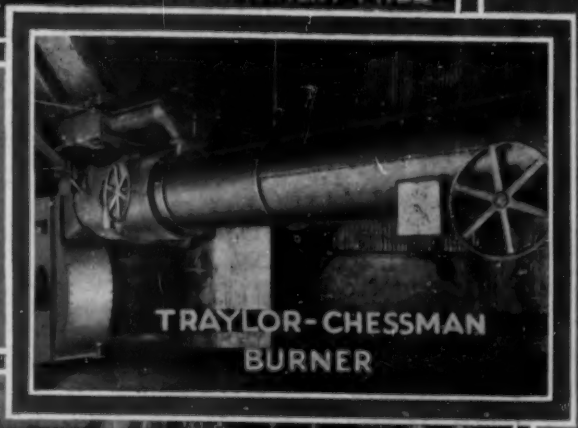
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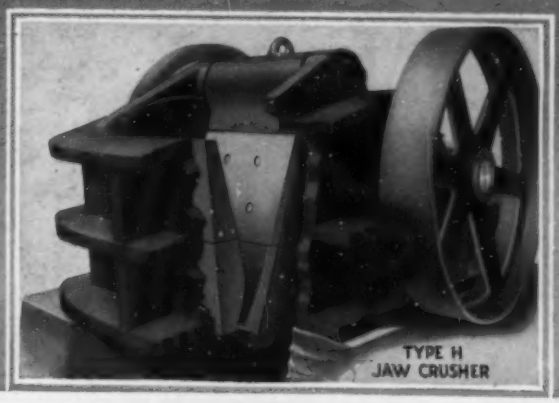
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IMPROVED TYPE COMPARTMENT MILL


TYPE T REDUCTION CRUSHER

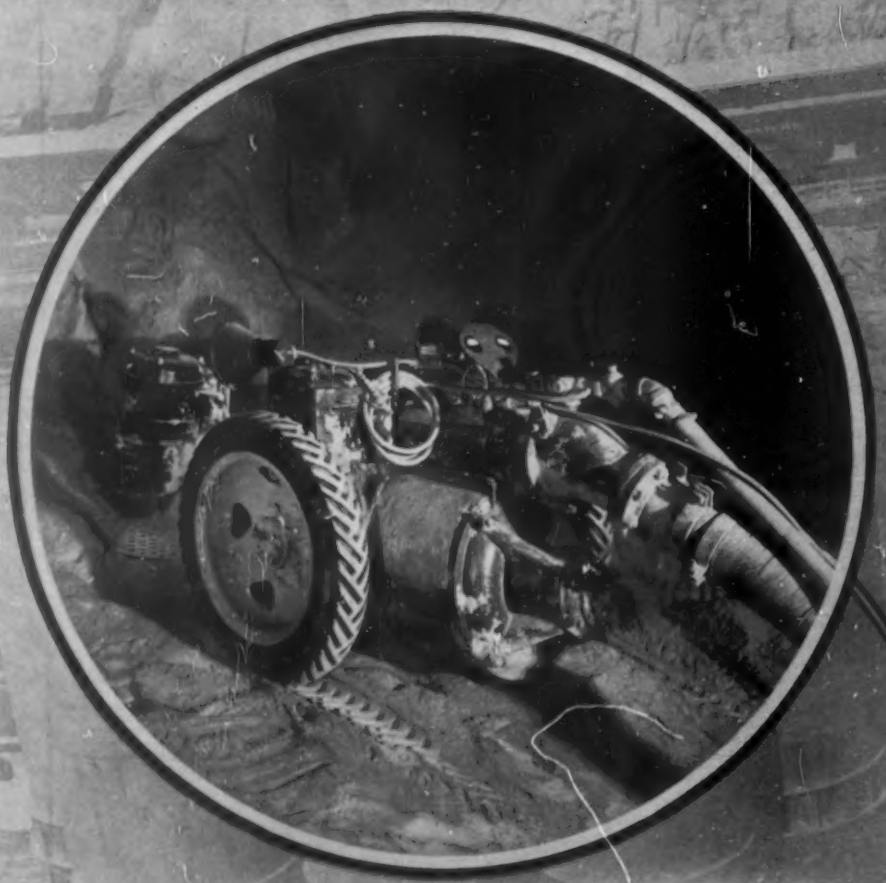

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TYPE H JAW CRUSHER


TRAYLOR-CHESSMAN COOLER

TRAYLOR ENGINEERING & MANUFACTURING CO.
ALLENTOWN, PENNA., U.S.A.

Fuller for Conveying and



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The illustration directly above shows the latest development of the Company . . . the Fuller-Kinyon Automatic Remote-Control Unloader. This machine is employed for unloading and conveying Portland cement, and other dry pulverized materials, and differs considerably from those previously manufactured by this Company. It offers a wider field of utility, greater handling capacity, the convenience, flexibility and safety of operation by remote control, simplified mechanical construction, and decreased liability to accidental stoppage.



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ROTARY AIR COMPRESSORS AND VACUUM PUMPS AUTOMATIC BATCH WEIGHERS BIN SIGNALS

Feeding Pulverized and Granular Materials





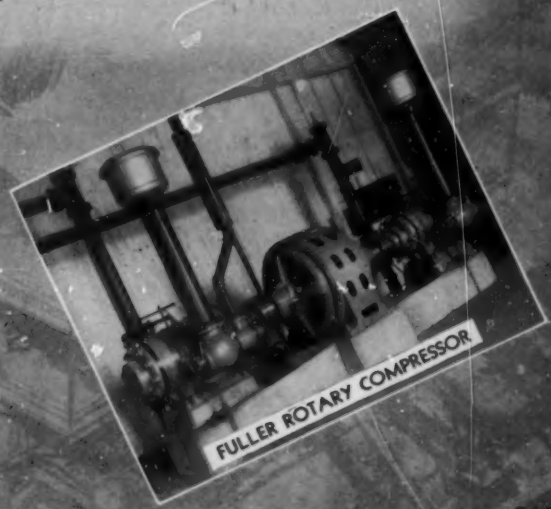
Fuller-Kinyon Pump (Stationary)—for conveying pulverized materials. Capacities one to 300 tons an hour. Conveys cement as far as 3600 ft. and to elevations of 300 feet.

Fuller Rotary Feeder—Delivers raw materials, pulverized coal, cement, lime, etc., with consistent, volumetric accuracy. Eliminates flooding. Available in sizes to meet all normal plant requirements.

The Airveyor—A pneumatic conveyor for fine, crushed, and granular materials. A system that has many advantages.

Fuller Rotary Compressors and Vacuum Pumps—Built in Single and Two-Stage types. Available in a full range of capacities up to 1800-c.f.m. at standard motor speeds; pressures up to 125 lb. gage . . . Vacuums up to 99 per cent of barometer.

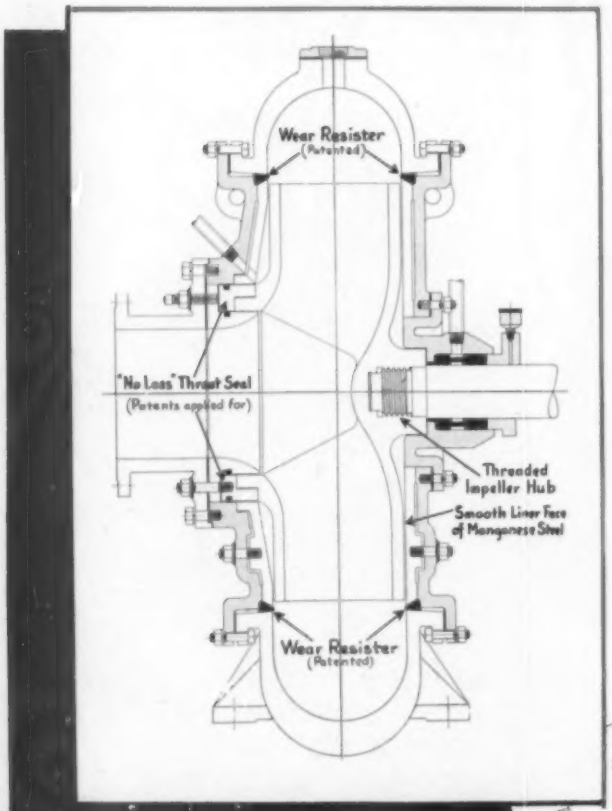




FULLER COMPANY - CATASAUQUA, PA.

CHICAGO—1118 Marquette Bldg. SAN FRANCISCO—320-321 Chancery Bldg.

THE COMPLETE DIAMOND DREDGE PUMP



Showing super-features of Diamond Dredge Pump construction. All parts made of Diamond Manganese Steel.

NOW comes a greater Diamond Dredge Pump with newly developed features and finely engineered construction for still better performance. For years, Diamond Dredge Pumps have been recognized for their ability to produce materials at low cost. Since 1932, P.M.Co. engineers have still further improved the design, and perfected detail parts to reduce operating costs to a minimum. These new developments have been tried and proven in actual service.

***Wear Resister*—A patented, exclusive feature that protects pump shell, side plates and liners from wear at vital points.**

***Threaded Impeller Hub or Bore*—This construction gives greater impeller throat clearance and insures a true running impeller at all times.**

***"No Loss" Throat Seal*—This special construction prevents internal leakage with the aid of clean pressure water. Due to its efficiency, only a minimum of clean pressure water is required. Wear on side plates, liners and impeller is greatly reduced. (Patents applied for.)**

Be sure to investigate Diamond advanced features before you decide on a dredge pump.

Read what this satisfied user has to say:—



LAKE SAND CORPORATION
BUILDERS BUILDING
228 NO LA SALLE STREET
CHICAGO

December 22, 1936.

Pettibone Mulliken Company,
4710 West Division Street,
Chicago, Illinois.

Gentlemen:

We want to express our appreciation for the splendid service obtained from the two "Diamond" dredge pumps which we installed on our sandsucker, the "Gilbert" during the last winter. Our production this past season was one of the largest in our history and the pumps performed unerringly all season.

Our power consumption was decreased and our production of material increased with these new pumps. We attribute this success largely to two facts; that the pumps were equipped with the "Wear Resister" and the seal on the impeller suction throat performed so successfully.

You may use this letter in whatever manner you please to acquaint other dredge pump users with the features of your pumps.

Yours very truly,
LAKE SAND CORPORATION
By

WHGC

PETTIBONE MULLIKEN CO.

4710 West Division Street — Dependable Manganese Steel Products — CHICAGO, ILLINOIS

P.M.Co. Products include Traveling Chain Cutters, Rotary Cutters, Elbows, Flap Valves, Nipples, Jaw Plates, Crusher Parts, Dippers, Dipper Teeth, Bucket Lips, Sheaves and many other Manganese Steel Products

50 Years of dominance

1887 — 1937



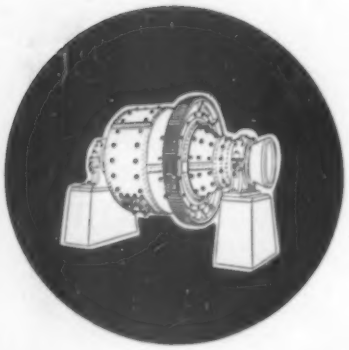
MILESTONES
in a Half Century of Achievement

• • •

1887 Air Separation
1888 Automatic Pulverizers
1895 Roller Mills
1905 Adjustable Deflector Air Separator
1919 Pneumatic Feed Control
1922 Imp Pulverizers
1924 Super Roller Mills
1926 Kiln Mills
1928 Mechanical Air Separators
1933 Whizzer-equipped Roller Mill
1934 Flash Drying System
1935 Bowl Mill

RAYMOND

Combustion Engineering Company, Inc.
RAYMOND PULVERIZER DIVISION
1307 North Branch Street, Chicago
Sales Offices in Principal Cities
Canadian Representative: Combustion Engineering Corporation, Ltd., Montreal



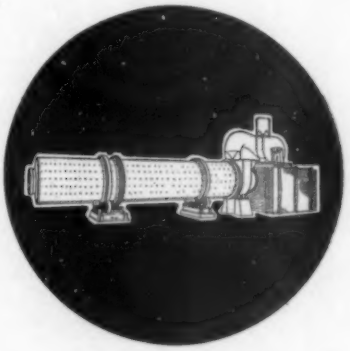
Pulverizer Maintenance Costs—only 2 cents per ton!

The Hardinge Mill holds the record for low maintenance costs for grinding ceramic materials, limestone, clay, cement, clinker, coal and ores. This also means lowest overall grinding costs.

When grinding dry—the reverse current air classifier keeps a dense "fog" of material between balls or pebbles at all times, preventing metal to metal (or pebble to pebble) contact.

When grinding wet—the cones keep the mass in circulation without rubbing against the heads which reduces both ball and liner wear and increases grinding efficiency.

Write for Bulletin 13C.



If Drying Efficiency is 40% It Can Be Raised to 70%

Unless you have made a "heat balance" recently or installed a modern Ruggles-Coles Dryer, the chances are, your drying efficiency is off.

A difference of 10% in drying efficiency (to say nothing of 30%) may pay for the cost of revamping or replacing your dryer in one year's time.

Rotary dryer performance has changed considerably in the last few years.

Control systems—mechanical improvements—more efficient heat transfer methods, all contribute to build up overall efficiency without increase in capital cost. Ruggles-Coles Dryers incorporate all these improvements. What do you dry?



A Scrubber That Reduces Clay Balls to Slime—in *one pass*

Mass Weight of Material, causes mass pressure to disintegrate thoroughly without crushing or grinding.

High Speed, keeps the mass extremely live—greatly reduces the water required.

Conical Ends, assure a quick and positive feed and discharge—with a vertical and lateral circulation of the mass, to speed up passage through drums.

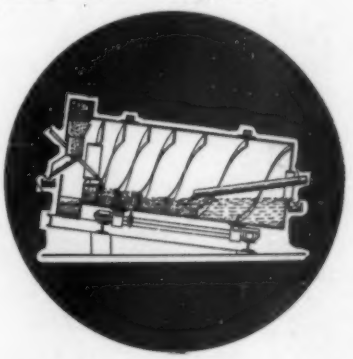
No Internal Moving Parts, no grates, elevating buckets, internal shafts or cutting blades —means negligible maintenance and low power costs.

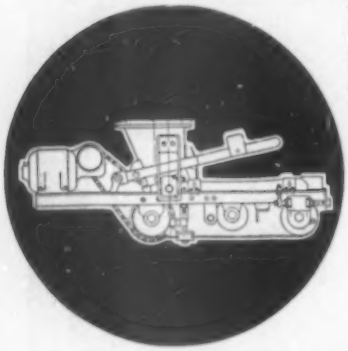
Classifier and Washer Capacity Doubled Per Square Foot of Floor Space

For that indoor job of classifying or washing—silt from sand—impurities from salts or fines from coarse particles, the Hardinge Counter Current Classifier is the ideal unit to use. It is easily acid-proofed—can be made practically gas tight. There are no dead corners to become stagnant or mechanical parts in the classifying zone to clog or jam.

Separations as coarse as 10 mesh or as fine as 325 mesh have been easily secured in a unit that requires half the floor space of other standard mechanical Classifiers.

Write for Bulletin 39A.





A Feeder That Does The "Impossible"

No one would believe that a Hardinge Constant Weight Feeder installed in front of almost any Pulverizer will increase the capacity of that pulverizer 10 to 25%—unless he installed the feeder or checked the results himself. Users have done just that and reported the capacity increase cited. That is not all! A record of the weight fed is kept as well. The unit is sturdy and inexpensive.

When an item costing 5% of the unit it serves can increase capacity 15%—it is worthy of your investigation now!

HARDINGE COMPANY

INCORPORATED

YORK, PA.
Main Office and Works

New York, N. Y.	San Francisco, Calif.	Denver, Col.	Chicago Ill.
122 E. 42nd Street	501 Howard St.	817 17th Street	205 W. Wacker Drive

SINCE 1866 SPECIALISTS IN CORRECT LUBRICATION



Beginning in 1866...with Hiram B. Everest...the Makers of Gargoyle Lubricants have served Industry longer than any other Oil Company!

Today, Gargoyle Lubricants and Socony-Vacuum Engineering save Millions for Plant Owners!

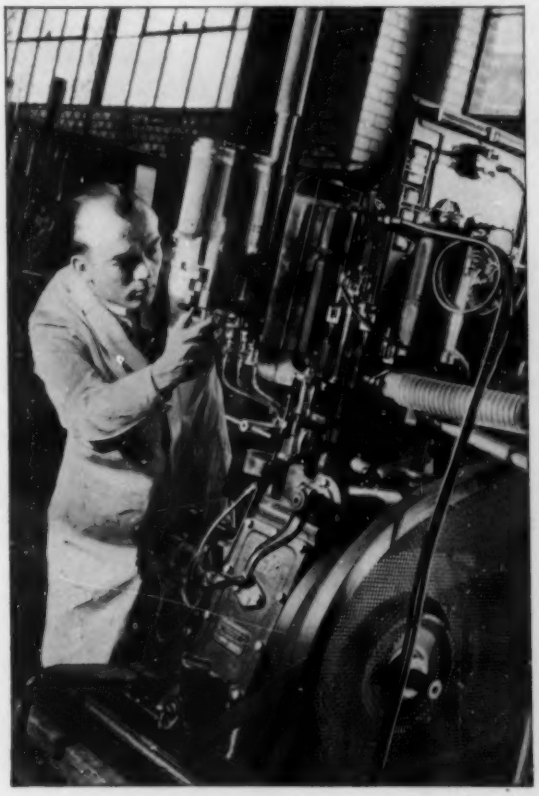
WHEN you do business with Socony-Vacuum, you get something that you can't buy from any other oil company:

Experience... 71 years of making Gargoyle Lubricants provide scientifically correct lubrication.

Socony-Vacuum engineers solve some 25,000 individual lubrication problems every year. They help capable plant staffs to curb friction losses and power consumption... reduce maintenance expense and repair costs... increase machine efficiency and step up production... lower oil bills and make better plant lubrication cost less.

It would be a very timely business move to urge your men to seek the cooperation of Socony-Vacuum engineers.

An organized plant lubrication program, based upon individual requirements, will enable them to do better work.



HOW THIS SPECIALIZED KNOWLEDGE WORKS FOR YOU IN YOUR PLANT:

1. **Curbs friction loss and reduces power consumption.**
2. **Reduces repair, replacement and maintenance expense.**
3. **Steps up machine efficiency for greater production.**
4. **Lowers oil bills to make plant lubrication cost less.**

SOCONY-VACUUM

INDUSTRIAL LUBRICATION

GARGOYLE Lubricants

SAVES MONEY FOR INDUSTRY

Read what 71 Years' Lubricating Experience... the Greatest in the Oil Business... can do for You. See Next Page.

1 Careful selection of the right kind of lubricants for all types of power and production equipment... curbing losses and waste of power generated or purchased.

2 Proper methods of application... the right oil in the right amount ...aiding higher machine speeds... minimizing spoilage or rejects...protecting capital invested in machinery.

THE SUM OF THESE FOUR SAVINGS

4

1. REDUCED POWER CONSUMPTION
2. MORE CONTINUOUS PRODUCTION
3. DECREASED MAINTENANCE
4. LOWER LUBRICATION COSTS

= CORRECT LUBRICATION

3 Experience in dealing with individual operating conditions... correction of out-dated practices often resulting in excessive repair and replacement costs.

4 A planned lubrication program ...quality lubricants where necessary...other lubricants where their use will provide economy and not handicap machine efficiency.

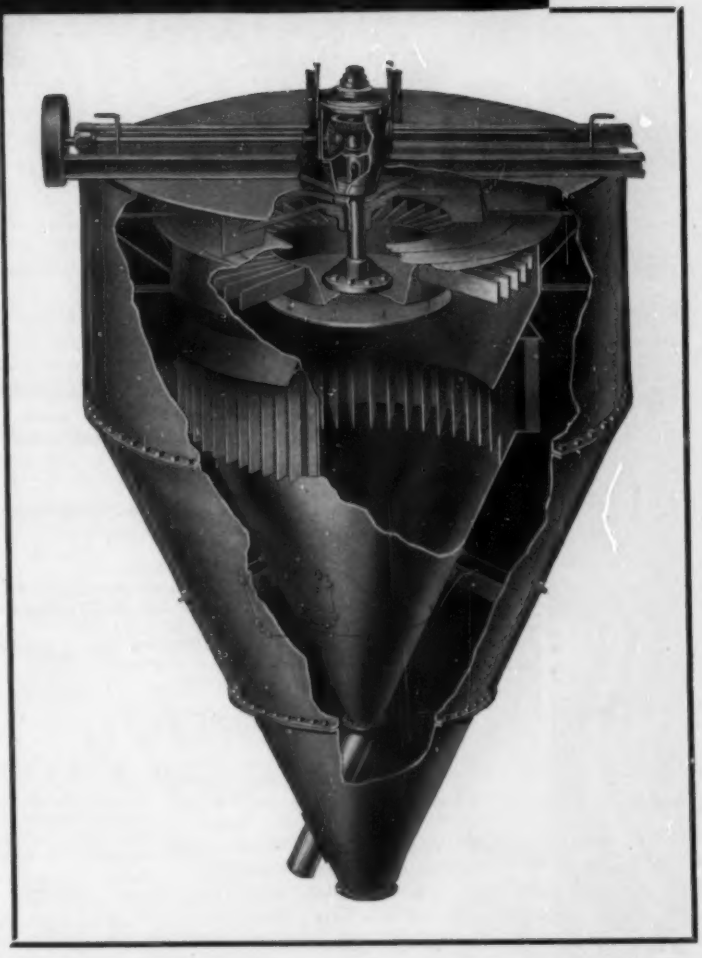
SOCONY-VACUUM OIL CO.

INCORPORATED

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA

GARGOYLE
Lubricants

The GAYCO Centrifugal Air Separator



A revolutionary advancement in Air Separation, the GAYCO has the inbuilt experience and refinements of many years' study of air separation problems as found and solved under all conditions of service—and in dealing with various types of materials.

There is no cushioning of fine material with the GAYCO. It increases the capacity of all types of grinding mills and covers the whole range of fine separation without any change in pulley speed.

The new and superior GAYCO Centrifugal Separator is essential to all types of grinding mills if a fine uniform product is to be assured. Increased production and general increase in quality soon pay for the GAYCO Centrifugal Air Separator through the better prices obtained for the product.

We also manufacture Bucket elevators — Bin gates — Belt conveyors — Feeders — Grizzlies — Rock crushers — Revolving screens, etc. Also complete crushing, screening and washing plants for crushed stone or sand and gravel.

Let our engineers give you the benefit of their many years' experience.

Universal Road Machinery Co.

MAIN OFFICE AND FACTORY
KINGSTON, N. Y.

LABORATORY
KINGSTON, N. Y.

GAYCO

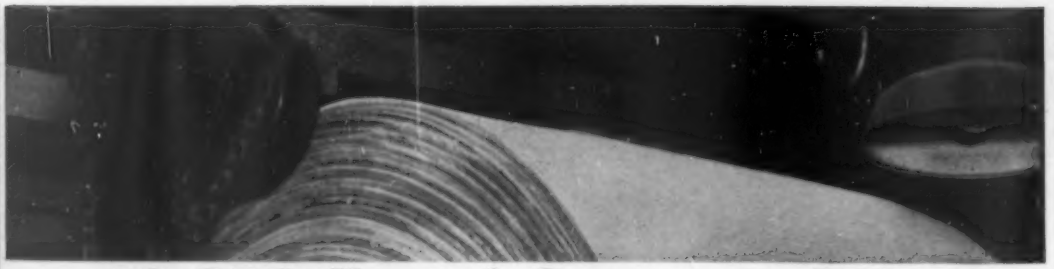
RUBERT M. GAY - DIVISION
114 LIBERTY STREET
NEW YORK, N. Y., U. S. A.

GAYCO

"GAYCO" CENTRIFUGAL SEPARATORS

"RELIANCE" CRUSHING, SCREENING AND WASHING EQUIPMENT

MANHATTAN



18,658 lbs. of Conveyor Belt



MANHATTAN has made many of the largest conveyor belts including this 18,658 lb. Super-Master Brand Belt now carrying crushed limestone. Submit your conveying problems to Manhattan's engineers and get the benefit of over 40 years' experience in developing conveyor belts for all kinds of materials, hauls and lifts.

Especially important for the severe service of mines, quarries, construction work is Condor Conveyor Belt, with the "Homo-flex" construction which gives longer life and low cost per ton carried.

Advantages of Condor "Homo-flex" Construction:

1. Extreme flexibility—troughs naturally even in thick ply and long narrow belts.
2. Reduces stretch to a new minimum.
3. Gives longer belt life due to complete bonding of every member in the belt into a homogeneous structure
4. Ply separation is eliminated.
5. Inseparable wear-resisting covers.
6. Resists puncture to a high degree.

Condor PRODUCTS

Transmission Belt	Suction Hose	Launder Lining
V-Belt	Fire Hose	Industrial Brake Lining
Conveyor Belt	Hydraulic Hose	Molded Rubber Goods
Air Hose	Steam Hose	Rubber Lined Tanks
Contractors Hose	Water Hose	Rubber Covered Rolls
Sand Blast Hose	Chute Lining	Rubber Bonded Abrasive Wheels

Super-Master Brand Belt for conveying crushed limestone. 1,193 feet long, 48" wide, 7 x 9 ply, made with 32 oz. duck and 1/4" x 1/16" covers. Net weight, 18,658 lbs.

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.

Speed Up



IF YOU ARE USING A TELSMITH CRUSHER PURCHASED AFTER JAN. 1923* and BEFORE JAN. 1931*

• • • regardless of its size, your Telsmith Primary Breaker and/or Reduction Crusher *capacity can be increased 25 per cent*, also greatly improving the quality of the product turned out.

Telsmith makes it possible for you to modernize your crusher to meet today's demands. Such outstanding Telsmith engineering advancements as—*roller bearing countershaft, cut steel drive gears, improved oiling system* may now be incorporated into *your* crusher. These great developments allow *much higher crushing speeds* . . . not merely more gyrations per minute but more actual crushing *by impact* . . . resulting in better cubing of the product, with less oversize.

This modernization service applies only to Telsmith *steel* crushers—introduced by Telsmith as standard design in 1923. Because cast iron and semi-steel crushers are vulnerable to breakage by tramp iron, we do not recommend that older crushers be operated at modern high speeds. *It will pay you to write for full facts and details.*

*In Jan. 1923 Telsmith adopted steel construction. In Jan. 1931 Telsmith current high-speed models were announced.

SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE, WIS.

Associates in Canada: Canadian Ingersoll-Rand Co., Ltd., Montreal, Toronto, Winnipeg, Vancouver.

50 Church Street, New York City
412 Westinghouse Bldg. Pittsburgh, Pa.
201 N. Wells Chicago, Ill.
Brandeis, M. & S. Co. Louisville, Ky.
1013 Commercial Trust Bldg. Philadelphia, Pa.
L. V. Fraley & Son St. Louis, Mo.
81 Binney Street Cambridge, Mass.
Abrams-Anderson Co. Detroit, Mich.

TELSMITH CRUSHERS

STURTEVANT

International Cement Corp.
Houston, Texas

Lehigh Portland Cement Co.
Michell, Indiana

Florida Cement Co
Tampa, Florida

Dewey Portland Cement Co
Dewey, Oklahoma

Northwestern States Portland Cement Co.
Mason City, Iowa

Blue Diamond Co
Los Angeles, California

Great Lakes Portland Cement Co.
Cleveland, Ohio

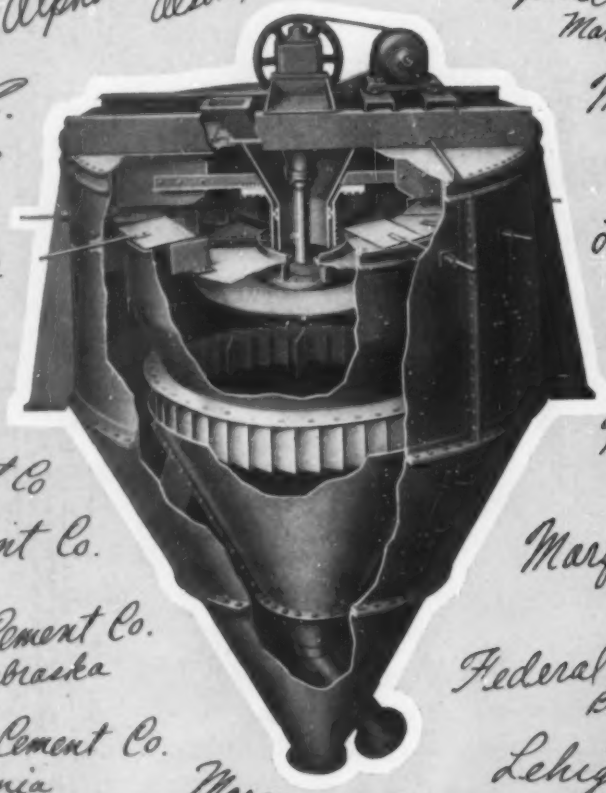
Alpha Portland Cement Co.
Alsen, New York.

Alpha Portland Cement Co.
Martins Creek, Pa.

Cementos Mexicanos, S. A.
Monterey, N. L. Mexico

Monarch Cement Co.
Humboldt, Kansas

El Melon Cement Co.
Chile, South America



Lehigh Portland Cement Co.
Chapman, Penna.

Lehigh Portland Cement Co.
Newcastle, Pa.

Aetna Portland Cement Co
Fenton, Michigan

Wellston Iron Furnace Co.
Superior, Ohio

Missouri Portland Cement Co
St. Louis, Missouri

North America Cement Co.
Howes Cave, New York.

Lehigh Portland Cement Co.
Mason City Iowa

Marquett Cement Mfg Co.
Oglesby. Illinois

Nebraska Portland Cement Co.
Superior, Nebraska

Federal Portland Cement Co.
Buffalo, New York

Santa Cruz Portland Cement Co.
Davenport, California

Lehigh Portland Cement Co.
Metaline Falls, Washington

Marquette Cement Mfg Co.
Cape Girardeau, Missouri

North America Cement Corp.
Security, Maryland

International Cement Corp.
Brazil, South America

Colorado Portland Cement Co.
Portland, Colorado

Alpha Portland Cement Co.
La Salle, Illinois

Medusa Portland Cement Co.
Cleveland Ohio For-

Huron Portland Cement Co.
Alpena, Michigan

Lehigh Portland Cement Co.
Fordwick, Virginia

Calaveras Cement Co.
San Andreas, California

Crescent Portland Cement Co.
Crescentdale, Penna.

Signal Mountain Portland Cement Co.
Chattanooga, Tenn.

Lehigh Portland Cement Co Ormrod, Penna

SEPARATOR INSTALLATIONS IN THE CEMENT INDUSTRY

Lehigh Portland Cement Co.
Oglesby, Illinois

Spokane Portland Cement Co.
Irwin, Washington

Pittsburgh Coke & Iron Co.
Pittsburgh, Penna.

California Portland Cement Co.
Colton, California

Marquette Cement Mfg Co.
La Salle, Illinois

Lehigh Portland Cement Co.
Iola, Kansas

Whitehall Cement Mfg Co.
Cementon, Penna.

National Cement Co.
Birmingham, Alabama

San Antonio Portland Cement Co.
Cementville, Texas

Kosmos Portland Cement Co
Kosmosdale, Kentucky

North American Cement Co.
Catskill New York

South Dakota Cement Plant
Rapid City, South Dakota

Republic Portland Cement Co.
Longhorn, Texas

Peerless Egyptain Cement Co.
Port Huron, Michigan

Great Lakes Portland Cement Co.
Buffalo, New York

Coplay Cement Manufacturing Co.
La Salle, Illinois

Dewey Portland Cement Co.
Davenport, Iowa

Universal-Atlas Cement Co
Waco, Texas

Nazareth Cement Co.
Nazareth, Penna.

Lehigh Portland Cement Co.
Birmingham, Alabama

West Penn Cement Co.
Butler, Penna.

Diamond Portland Cement Co.
Middlebranch, Ohio

Colorado Portland Cement Co.
Boettcher, Colorado

Ash Grove Portland Cement Co.
Louisville, Nebraska

Allentown Portland Cement Co.
Evansville, Pa.

Calaveras Cement Co
Kentucky House, California

Southwestern Portland Cement Co
Victorville, Calif.

Petoskey Portland Cement Co.
Petoskey, Michigan

FEATURES THAT PUT THEM THERE

Control of Particle Size — Raw Material Control—Increased Kiln Capacity—Lower Fuel Consumption — Increase in Tri-Calcium Silicates — Uniformity in Clinker Sizes — High Early Strength — Positive Uniformity—Any surface area (1500 to 3000) Positive Control — Lower Temperature 50 to 100 degrees.

Names from list as of December 1, 1936

STURTEVANT HARRISON SQUARE BOSTON, MASS. **MILL CO.**

Three Williams "ALL-STAR" Performers for ·1937·



ROLLER MILLS with AIR SEPARATION

The outstanding equipment for all fine grinding operations. The following are some advantages of Williams Roller Mills with Air Separators.

A more efficient Air Separator. Instantly changeable from 70% 100-mesh to 99.99% 325-mesh. Heavy boiler plate top. A more durable Roller Mill. Ball Bearing operation throughout. Steel instead of cast iron at important points. Dries and grinds simultaneously.



HAMMER CRUSHERS

Over 50 sizes and types of Williams Hammer Crushers are available. Small sizes crush one-man stone or screen rejects to agricultural size, ¾", 1¼" or 2½" in one operation. Larger sizes take stone from largest primary crushers or steam shovel loaded rock and reduce to commercial sizes in one reduction. Usually one Williams Crusher supplants two or three machines of smaller crushing ratio.



VIBRATING SCREENS

Many users of Williams Roller Mills and Hammer Mills have found our Vibrating Screens very efficient and economical in their plants. Construction is entirely of steel plate, steel castings and structural shapes substantially riveted together and then electrically welded, thereby positively preventing its shaking apart. Built in single, double and triple deck types exposed screen or totally enclosed for handling dusty products.

If you have a reduction problem either coarse grinding, fine grinding or a complete plant, let Williams engineers tell you about the proper equipment for the job.

Williams Patent Crusher & Pulverizer Co.
800 St. Louis Ave. St. Louis, Mo.

Sales Agencies in All Principal Cities Including

CHICAGO, 37 West Van Buren St. NEW YORK, 15 Park Row SAN FRANCISCO, 326 Rialto Bldg.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. ST. LOUIS, MO. U.S.A. THE TRADE MARK. REG U.S. PAT OFF

WILLIAMS

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

PATENT CRUSHERS GRINDERS SHREDDERS



GAIN GREATER VOLUME WITH REX MOTO-MIXERS

1937 opens new opportunities in the sale of ready-mixed Concrete. Protect your business in sand, gravel, stone and cement and gain bigger volume now. In 1937 Rex Modern Cone-End Drum Moto-Mixers and Agitators offer new opportunities for volume, new low costs in any type of ready-mix business.

Now with the rising volume in construction greater sales of sand, gravel, stone and cement are available with Rex Moto-Mixers. They are the equipment you need for the modern, profitable way of selling concrete.

Rex modern Cone-End Drums are producing better concrete that is finding ready and wide markets.

Rex lighter weight by use of Man-Ten steels means bigger pay loads and lower ton-mile costs.

New, smoother, streamlined design makes a better advertisement for your business on the street.



READY-MIXED CONCRETE

Send today for a copy of the book, "Rex Moto-Mixers and Agitators." It describes the modern way to secure a better margin on this modern profitable method of selling cement and aggregates. It also illustrates Rex Moto-Mixer features.

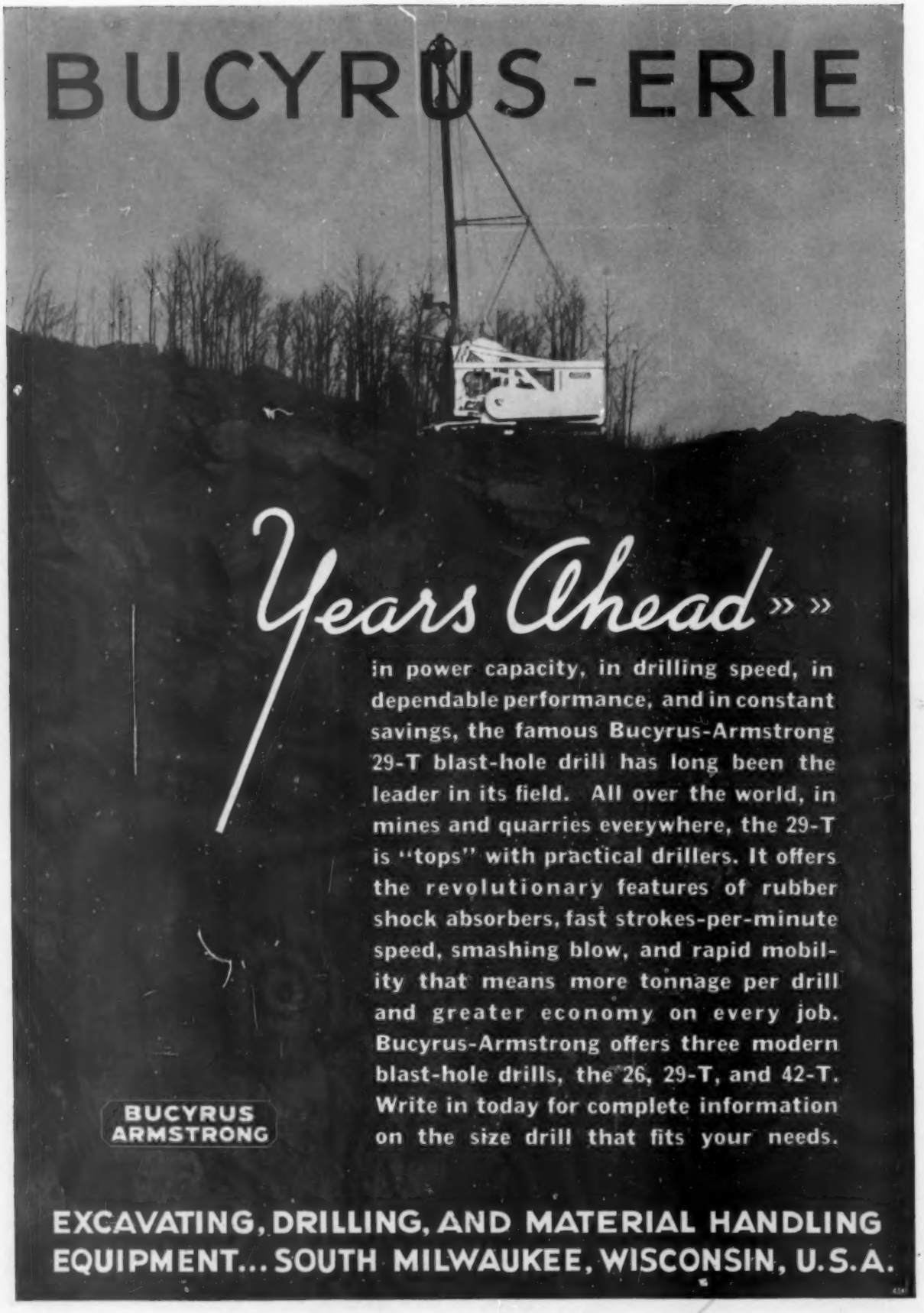
CHAIN BELT COMPANY
1649 W. Bruce St. Milwaukee, Wis.



REX The Up-to-date Method of Handling Concrete

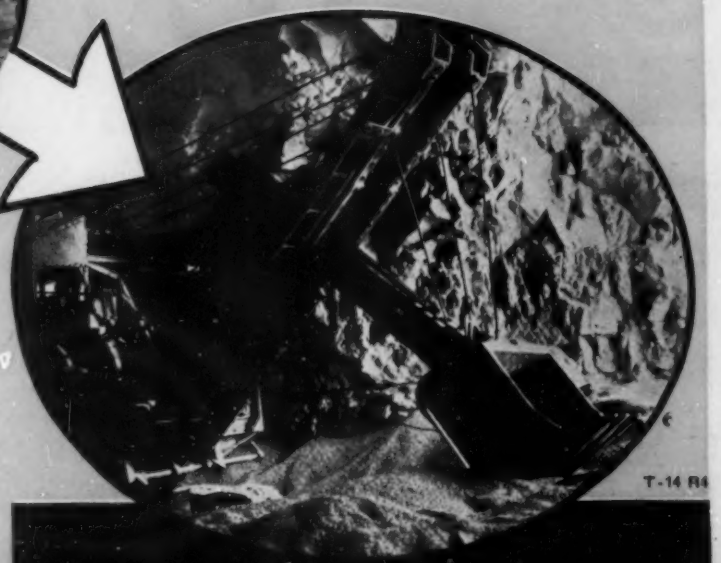
Moto-Mixers

CHAIN BELT COMPANY *of Milwaukee*


BUCYRUS-ERIE
Years Ahead » »
in power capacity, in drilling speed, in dependable performance, and in constant savings, the famous Bucyrus-Armstrong 29-T blast-hole drill has long been the leader in its field. All over the world, in mines and quarries everywhere, the 29-T is "tops" with practical drillers. It offers the revolutionary features of rubber shock absorbers, fast strokes-per-minute speed, smashing blow, and rapid mobility that means more tonnage per drill and greater economy on every job. Bucyrus-Armstrong offers three modern blast-hole drills, the 26, 29-T, and 42-T. Write in today for complete information on the size drill that fits your needs.
BUCYRUS ARMSTRONG
EXCAVATING, DRILLING, AND MATERIAL HANDLING EQUIPMENT... SOUTH MILWAUKEE, WISCONSIN, U.S.A.

Tested and Approved for HEAVY DUTY





Only when wire comes within the narrow tolerance of our rigid specifications, is it permitted to go into any Broderick & Bascom Wire Rope.

The qualifications for use in Yellow Strand are particularly high because this celebrated rope is intended for duty where conditions are unusually severe.

"Flex-Set" Preformed Yellow Strand is made of this same high quality wire.

The difference is this: each strand is pre-shaped to the helical form it will maintain in the finished rope.

Result: a rope that is virtually pre-broken in, flexible, easy to handle and install, with little tendency to kink or fatigue.

For long, satisfactory, economical service, use "Flex-Set" Preformed Yellow Strand.

Broderick & Bascom Rope Co.
St. Louis

Factories: St. Louis - Seattle - Peoria

Branches:
New York - Chicago - Seattle
Portland - Houston

T-14 R4

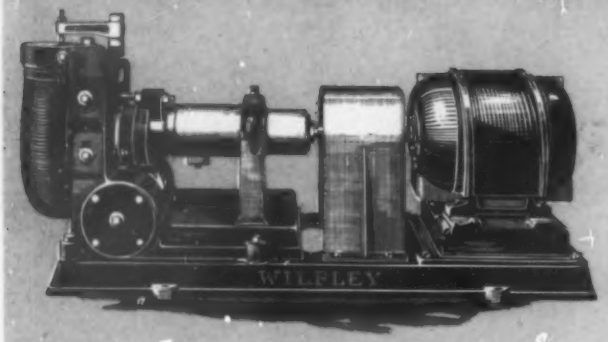
"Flex-Set" Preformed YELLOW STRAND

WILFLEY

SAND AND SLIME

PUMPS

SAVE PUMPING COSTS



Reg. U. S. Pat. Off.

A. R. WILFLEY & SONS, INC.
DENVER, COLO., U. S. A.

NEW YORK OFFICE:
1775 BROADWAY, NEW YORK, N. Y.

In plants where more than one method of handling slurries is used, you'll nearly always find the Wilfley doing the HARD job. That's because plant managers KNOW that the Wilfley is DEPENDABLE. It reduces pumping costs because it eliminates troublous features that cause *uncertainty*. Stuffing box, stuffing, gland water, shaft wear—ALL these *uncertain* elements are ELIMINATED. The Wilfley Centrifugal Seal replaces them with DEPENDABILITY.

Close clearances and *uniform* efficiency are *kept* by easy slippage seal adjustment. Heavy pumping parts are made of material that works best on your particular job. Alloy iron, rubber, alloy steels—whatever best meets the requirement. Thus the Wilfley is a pump that handles the HARDEST jobs—running *continuously* for long periods *without* attention. Complete service by experienced engineers. Prompt shipment of parts. Write for full details.

WILFLEY

centrifugal SAND PUMPS

PATENTED



45th UNIVERSAL

Purchased by One Producer

CERTAINLY—SUCH CONFIDENCE MUST BE MERITED

These 45 UNIVERSAL VIBRATING SCREENS, in different sizes and types, are being operated in the limestone, gravel and sand plants owned by this one Firm.

For many years, from 40 to 50% of our entire Vibrating Screen production, has been shipped on REPEAT ORDERS from completely satisfied customers.



UNIVERSALS have proven their ability to *stand up* under the most severe operating conditions, and keep right on giving unequalled screening service at the very lowest cost. Vibrating Screens we built sixteen (16) years ago are still going strong and paying dividends to their users.

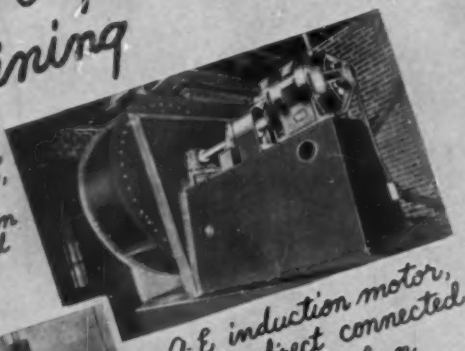
While there are thousands of UNIVERSAL Vibrating Screens in service, have you noticed—you hardly ever hear of one for sale in the used equipment markets? The truth of the matter is—our customers like them and keep them.

The latest model UNIVERSAL Vibrators are better than ever, and will certainly surprise you with their ability to handle the toughest assignment your screening requirements call for, yet—they are the most reasonably priced machines on the market.

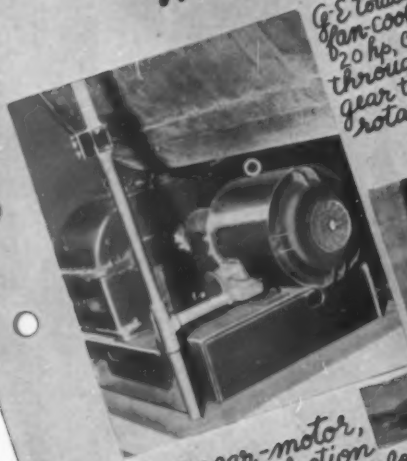
May We Send You Catalog and Price Sheet?
No Obligations Whatever.

UNIVERSAL VIBRATING SCREEN CO.
RACINE - - WISCONSIN

Notes Made on factory trip to Minnesota Mining



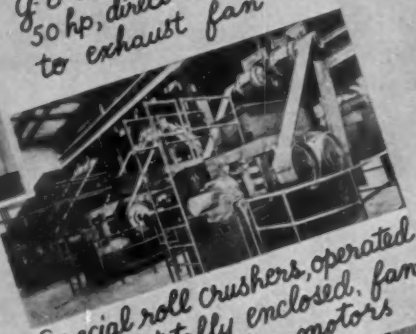
G-E totally enclosed, fan-cooled d-c motor, 20 hp, connected through reduction gear to oil-fired rotary kiln



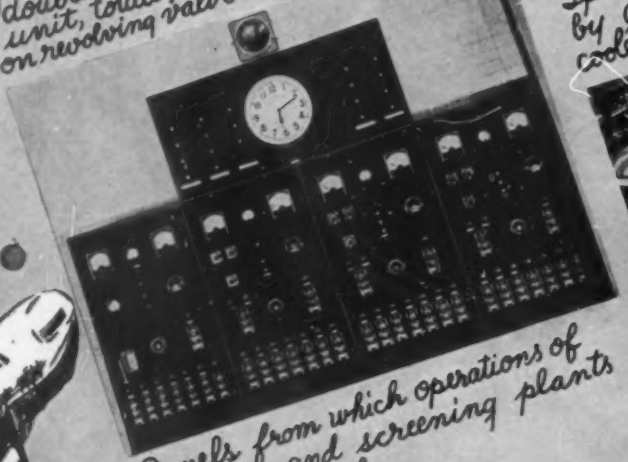


G-E gear-motor, double-reduction unit, totally enclosed, flange-mounted, on revolving valve above belt conveyor

G-E induction motor, 50 hp, direct connected to exhaust fan



Special roll crushers, operated by G-E totally enclosed, fan-cooled induction motors



Panels from which operations of crushing and screening plants are controlled



G-E totally enclosed, fan-cooled, wound-rotor induction motor, 100 hp, operating crusher



G E N E R A L

ANOTHER TRIP SHOWS HOW

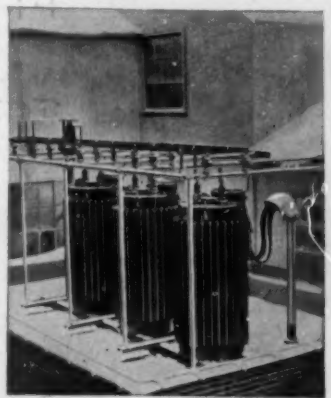
Minnesota Mining and Manufacturing Co.

Gets Lower Costs with G-E Equipment

THAT'S what the engineers at this rock-products plant at Wausau, Wisconsin, told us—that they were getting lower costs through the efficient performance of their electric equipment, which is G-E throughout.

Quarry-sized quartzite rock is reduced and processed to provide colored granules for use in the roofing industry. Forty G-E motors, ranging from 1½ to 100 hp, drive the machinery. Provided with matched control and exactly suited to the job, these motors use the minimum amount of power.

The new transformers, too, have helped effect savings by their high efficiency in reducing transmission voltages to the required values. The simplicity and tested construction of all the equipment result in low maintenance costs and low operating expense.



G-E oil-immersed transformers, 333 kva, give high efficiency in transformation of voltage

Unless your plant is exceptional, *your* operating expense could be reduced by the use of new G-E equipment. For information on electric equipment for shovels, quarry hoists, rock crushers, material conveyors, and automatic kiln-temperature control, call the nearest G-E office. We shall be glad to help you plan a co-ordinated electric power installation. General Electric, Schenectady, New York.

011-152

ELECTRIC



Job Engineers Specify Concrete Mixed with JAEGERS!



• *In* CINCINNATI

There's a reason why engineers in Cincinnati, and from coast to coast, prefer concrete mixed with Jaeger Truck Mixers:

Jaeger's 100% accurate water control—exclusive Dual-Mix action with the Jaeger double-end-cone drum — Dual-Mixing speeds to compensate for long or short hauls—fast, 2-speed discharge with complete absence of segregation and complete self-cleaning—these features mean concrete of recognized superior quality, workability and higher ultimate strength.

Users will also tell you that Jaeger's light weight and long life, because of highly developed design and the use of Man-Ten Alloy Steel, cut repair bills on mixers and trucks—save on tires—save on gas—help bring operators the maximum profit that comes from low cost operation.

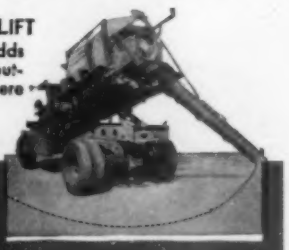
Because these features assure dependable, economical delivery of the finest concrete, more ready-mixed concrete is being delivered with Jaeger Truck Mixers than by any other method. In towns under 10,000 up to largest cities, Jaeger equipped plants are building bigger business and earning prosperity incomes for their owners. Write for catalog and information that will help you plan for a bigger share of this fast-growing market.

Pioneer Truck-Mixer User Tells of JAEGER Experience . . .

"Writer was original transit mix operator in Cincinnati metropolitan area. Since 1929 have bought 30 Jaeger mixers. Original 15 units, bought in 1929-30, poured over 300,000 cu. yds. of concrete in 3½ year period and are still in first class condition, good for indefinite service. To take care of peak pours have rented other makes of transit mixers. Several times engineers in charge asked us to put the rented equipment on other work as they preferred concrete produced by our Jaegers. Jaeger service on repair parts necessary on any mechanically operated unit is prompt. Very pleased to have you use my name as a satisfied user." The Howard Concrete Producing Company, Cincinnati, O.



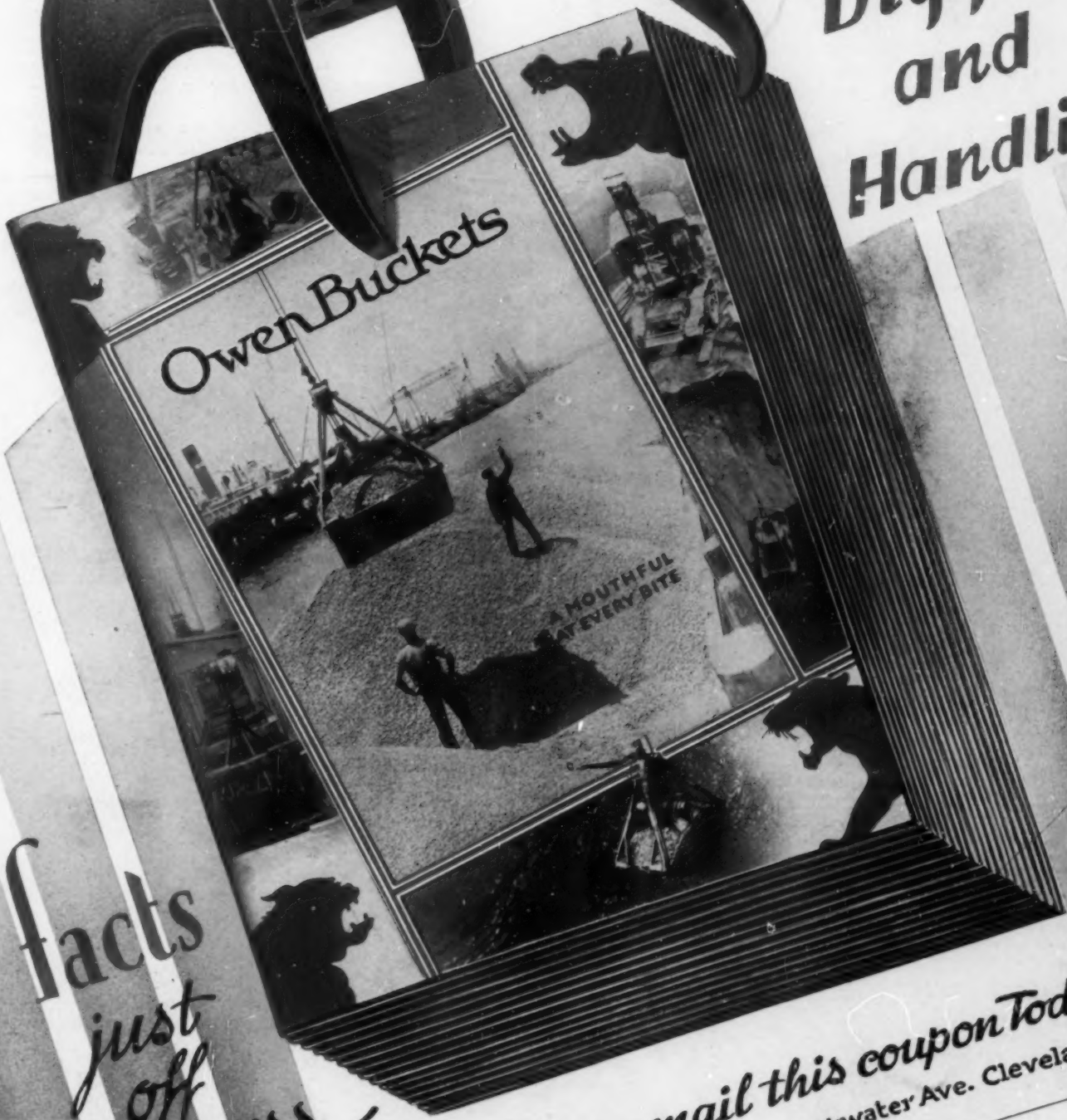
THE JAEGER MACHINE CO.
603 DUBLIN AVE., COLUMBUS, OHIO



HIGH REAR LIFT
Attachment adds 75% more spouting area where needed.

JAEGER TRUCK MIXERS

Owen RAISES STANDARDS in Digging and Handling



facts just off the press

Speed Your Copy—mail this coupon Today!

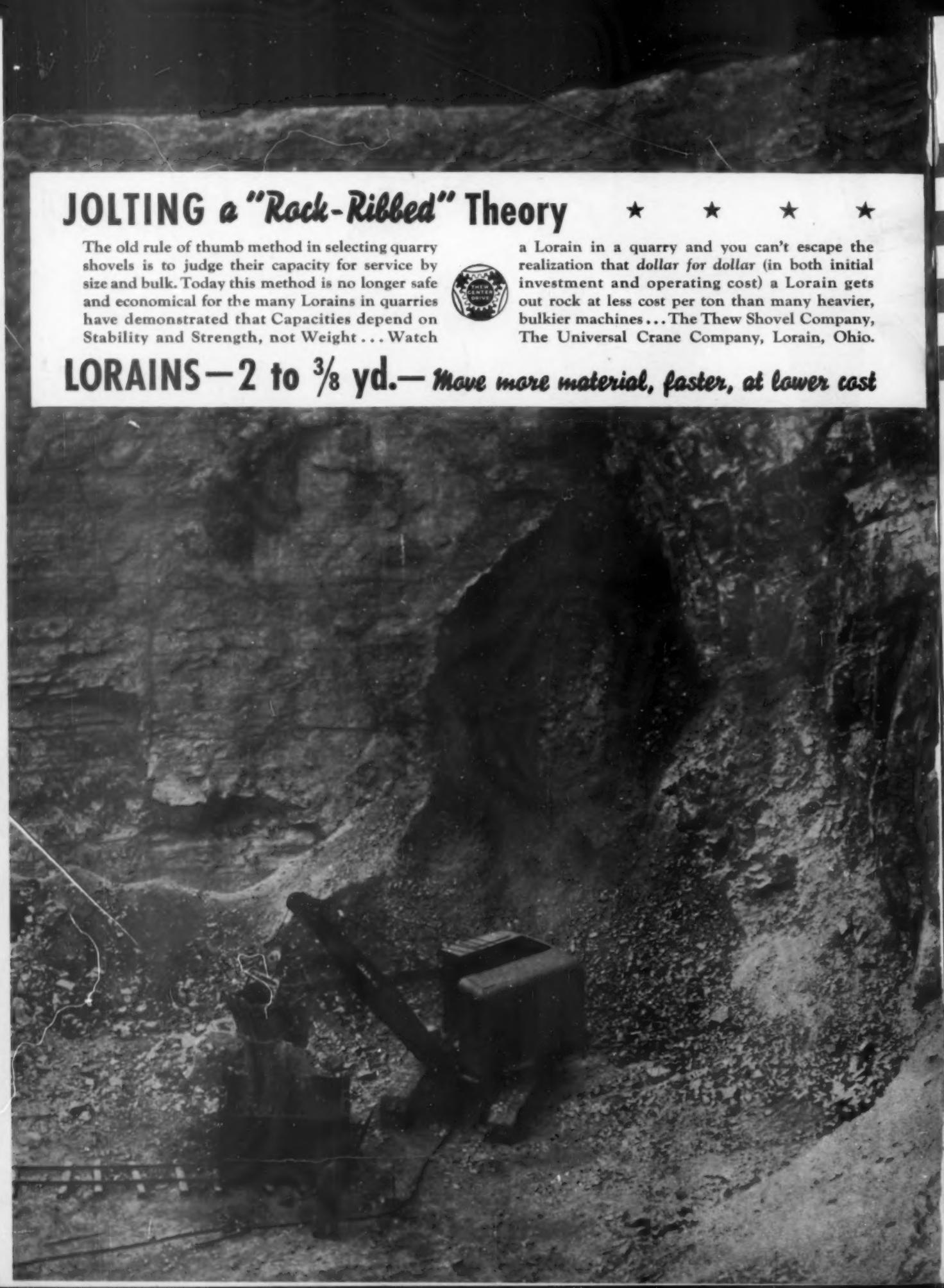
The OWEN BUCKET Co. 6000 Breakwater Ave. Cleveland, O.

Company _____

Address _____

City _____

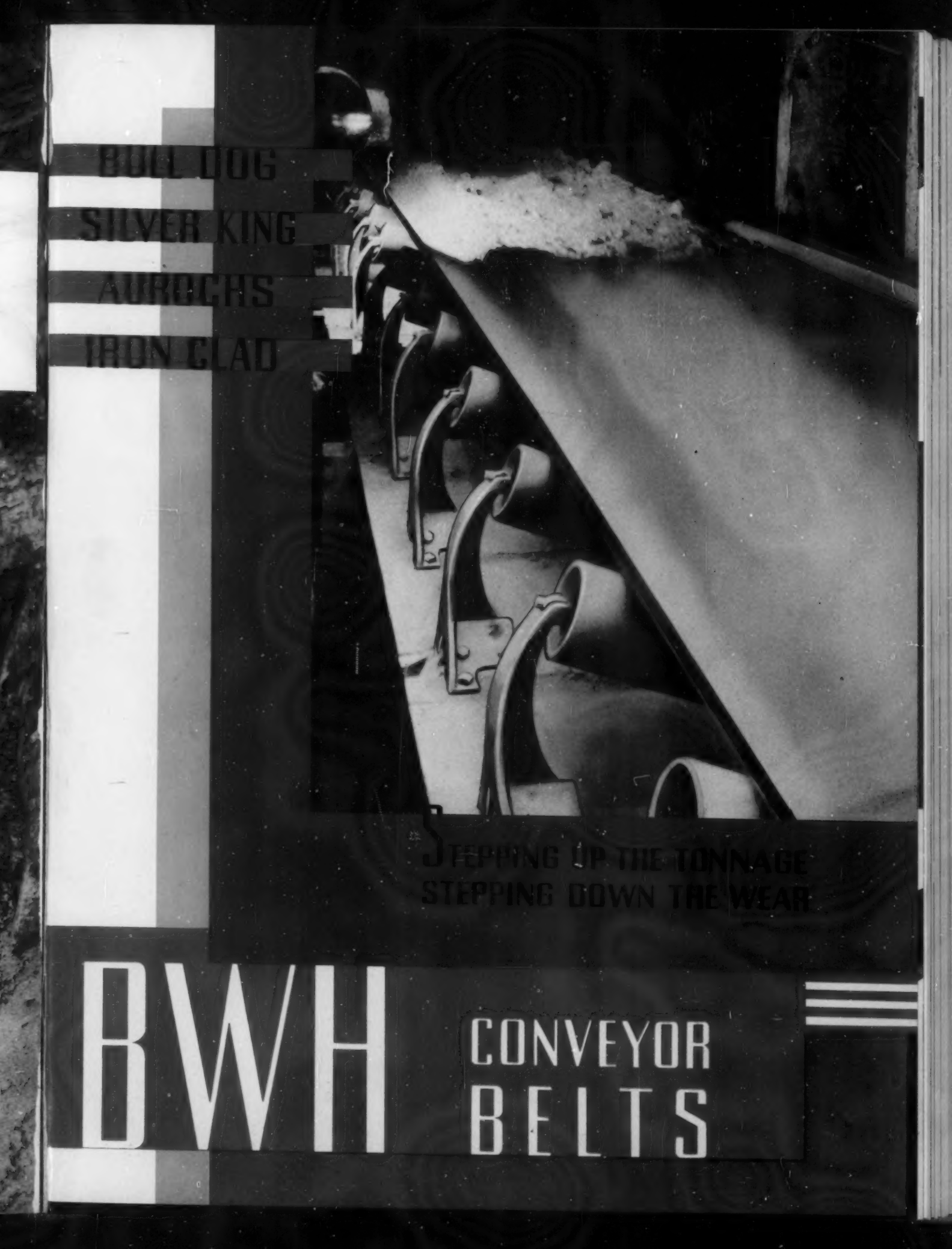
By _____



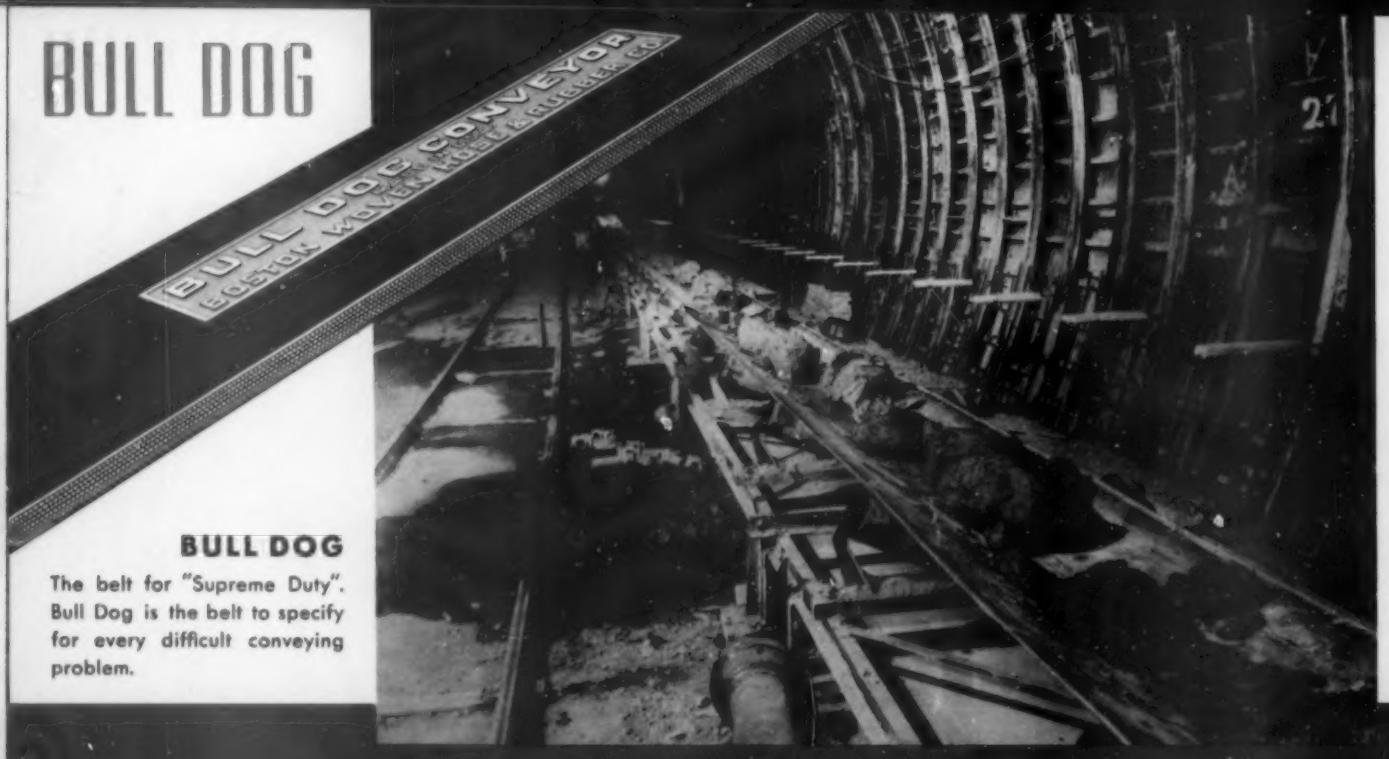
JOLTING a "Rock-Ribbed" Theory ★ ★ ★ ★

The old rule of thumb method in selecting quarry shovels is to judge their capacity for service by size and bulk. Today this method is no longer safe and economical for the many Lorains in quarries have demonstrated that Capacities depend on Stability and Strength, not Weight . . . Watch a Lorain in a quarry and you can't escape the realization that *dollar for dollar* (in both initial investment and operating cost) a Lorain gets out rock at less cost per ton than many heavier, bulkier machines . . . The Thew Shovel Company, The Universal Crane Company, Lorain, Ohio.

LORAINS—2 to ⅜ yd.— *Move more material, faster, at lower cost*


BULL DOG
SILVER KING
AUROCHS
IRON CLAD
STEPPING UP THE TONNAGE
STEPPING DOWN THE WEAR
BWH
CONVEYOR
BELTS

BULL DOG



BULL DOG

The belt for "Supreme Duty". Bull Dog is the belt to specify for every difficult conveying problem.

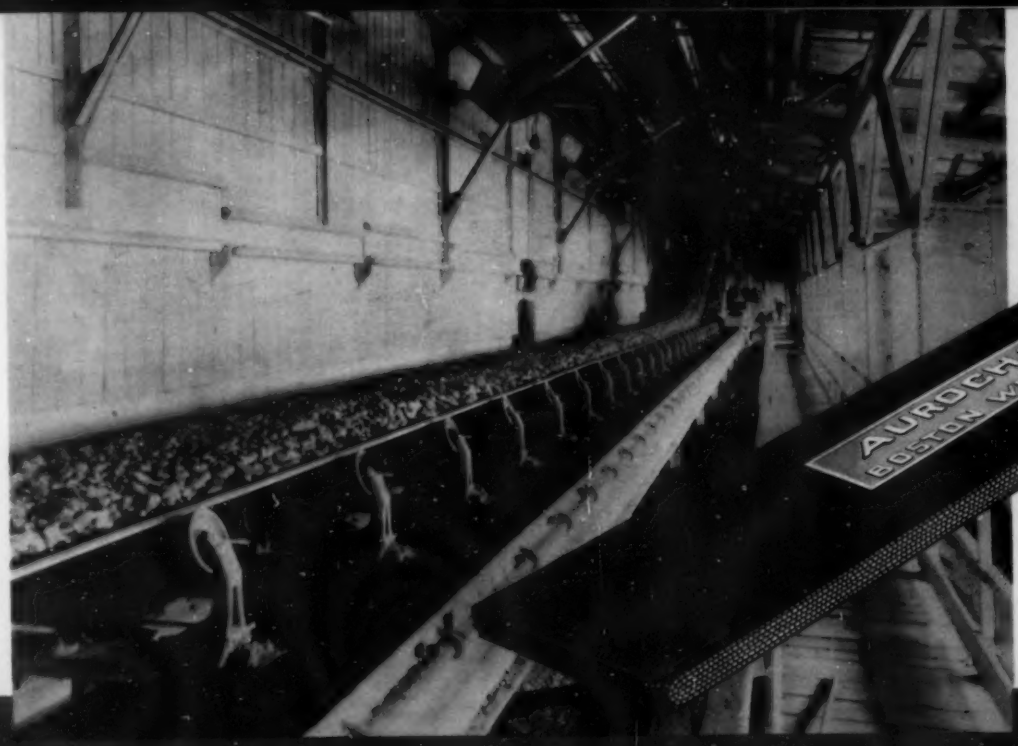
BWH

SILVER KING



SILVER KING

For "Superior Duty". Ideal for sharp sand, lump coal, cement rock and similar materials.



AUROCHS



AUROCHS

For "Hard Duty". Recommended for coarse gravel, sand, hard coal and the ordinary run of stone and rock.

CONVEYOR BELTS



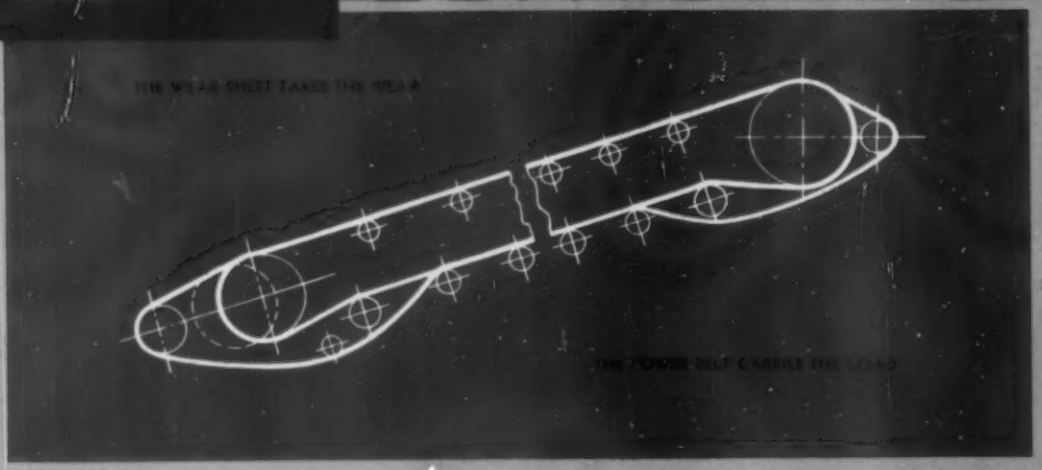
IRON CLAD



IRON CLAD

The popular "Average Duty" belt. Efficient and economical for handling sand and gravel, cement, lime, pulp, chips and general conveying service.

The DUPLEX SYSTEM of CONVEYING



THE DUPLEX SYSTEM IS A NEW IDEA IN MATERIALS HANDLING

From one-half to three-quarters of the cost of every ordinary conveyor belt in your plant (the duck) pays for carrying the weight of the material and transmitting the power.

The remaining portion (the rubber cover) takes the wear. Yet, when the cover wears out the whole belt must soon be discarded and you are obliged to incur the entire investment all over again.

The Duplex System reduces operating costs because of its two distinct parts — the wear sheet to wear out in the natural course of operation, and the power belt to remain in service year after year saving money continuously by earning its cost over and over again.

Thus you eliminate the necessity of throwing away a valuable belt carcass which is out of service through no fault or defect of its own, but simply because it is of little use without the portion which protects it from rapid wear.

Our Engineering Department will gladly go over your specifications and determine how you can profit by the Duplex System.

BOSTON WOVEN HOSE & RUBBER CO.

BOSTON, MASS., U.S.A.

Send us your specifications for our suggestions.



NEW

Manganese Steel Handbook

FREE

Only 32 pages, but crammed full of information as to "where" and "how" and "why" Rol-Man will last longer where tough-hardness, strength and abrasion resistance is required. Tables show analysis of Rol-Man Rolled True (11%-14%) Manganese Steel and compare its "effective strength" with other metals. Hundreds of parts we have made in the past 15 years are alphabetically listed, to give a comprehensive picture of the type of service where Rol-Man excels. If you are troubled with the bugaboo of excessive wear and frequent breakage of any forged, rolled or pressed steel part, we feel sure this booklet will be most interesting.

Rol-Man Rolled, True (11% to 14%) Manganese Steel has practically double the strength and abrasion resistance of cast manganese steel, ten times the "effective strength" of mild steel and three and a half times that of heat treated nickel steel. It is also available in Welding Rod and Threaded Bolts.

True
MANGANESE STEEL
FORGINGS ROL-MAN STAMPINGS
Rolled Products Wire & Rod Products

MANGANESE STEEL FORGE CO., CASTOR AVE. AND BATH ST., PHILADELPHIA

COUPON

FILL IN AND MAIL TODAY

for a copy of Booklet 4R entitled "Index of Applications"

Mr. _____ Title _____

Company _____

Address _____

MEET STRICTER SPECIFICATIONS

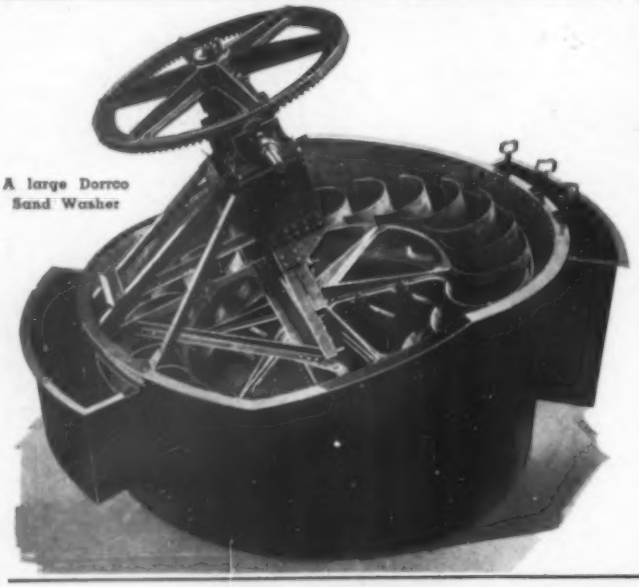
with a

DORRCO SAND WASHER...



Dorrco Sand Washer on trailer, ready to move to the next location.

DORRCO SAND WASHER SIZES	
Size	*Capacity*
7 ft. dia.	20- 40 tons per hr.
9 " "	40- 80 " " "
12 " "	80-150 " " "



A large Dorrco Sand Washer

HERE is a compact, self-contained unit—The Dorrco Sand Washer—that will settle once and for all that matter of stricter sand specifications. It is ideally adapted to installation on drèdges, on land or on portable sand plants. It is built by the same company that supplied the special sand washing systems for the world's two largest preparation plants at Boulder and Grand Coulee Dams.

Fine grain is recovered and not lost in the silt-laden overflow water. Sand is washed mechanically by the revolving buckets and is discharged after draining without loss in head.

The Dorrco Sand Washer is supplied in four convenient sizes as listed at the left. The two smaller sizes are shipped completely assembled, ready for installation on a simple timber foundation.

DORRCO

Write Now For Our Booklet

"ARE YOU GETTING CLEAN SAND"

THE DORR COMPANY INC.

ENGINEERS • 570 Lexington Ave., New York

CHICAGO • TORONTO • DENVER • LOS ANGELES • ATLANTA

DORR TECHNICAL SERVICES AND EQUIPMENT ARE AVAILABLE FROM THE FOLLOWING COMPANIES:

HOLLAND: Dorr-Oliver N. V. The Hague
FRANCE: Soc. Dorr-Oliver, Paris
GERMANY: Dorr Gesellschaft, m. b. H. Berlin
ENGLAND: Dorr-Oliver Company Ltd., London
AUSTRALIA: Crossle & Duffy Pty. Ltd., Melbourne
SOUTH AFRICA: Edward L. Bateman Pty. Ltd., Johannesburg
JAPAN: Andrews & George Co. Inc., Tokio
ARGENTINA: Luis Fiore, Buenos Aires
BRAZIL: Oscar Taves & Co., Rio de Janeiro

WHEN WINTER COMES!



THE GRASSHOPPER CURLS UP AND DIES.-
THE BEAR CURLS UP TO GO TO SLEEP.—
THE SQUIRREL CURLS UP HIS TAIL AND CHATTERS DEFIANCE TO THE COLD:-
THE DUCK FLIES SOUTH.—
THE MODERN PRODUCER GETS HIS EQUIPMENT READY FOR NEXT YEAR.



● THIS WISE PRODUCER CHECKS OVER HIS EQUIPMENT---REPLACES OBSOLETE SCREENS -- INSTALLS NEW EFFICIENT REDUCTION CRUSHERS AND COMPLETELY MODERNIZES HIS PLANT.

WE HAVE HELPED OTHERS -- WE CAN HELP YOU.---



HAVE YOU SEEN THE NEW **PIONEER** HORIZONTAL GRADATION SCREEN?

CHECK AND SEND THIS COUPON.

PIONEER GRAVEL EQUIPMENT MFG. CO.
1515 Central Ave., Minneapolis, Minn.
Gentlemen:
We are planning to modernize our equipment in preparation for 1937 business. Tell us about your —

- ☐ Jaw Crushers
- ☐ Horizontal Gradation Screens
- ☐ Vibrating Screens
- ☐ Conveyor Units
- ☐ Washing Plants
- ☐ Roll Crushers
- ☐ Sectional Conveyors
- ☐ Quarry Plants

Name .....
Address .....
Town ..... State .....

PIONEER GRAVEL ROCK EQUIPMENT

WELCOME TO THE STONE SHOW



CINCINNATI • JANUARY 18 • 20 • 1937

In inviting you to our booth, we do so not only as a company, but as a group of associates who keenly appreciate the friendships of thousands of persons in the crushed stone industry.

When you visit us, we shall be glad to show you our latest developments in quarry explosives and blasting supplies.

Booths 31-32

D-6

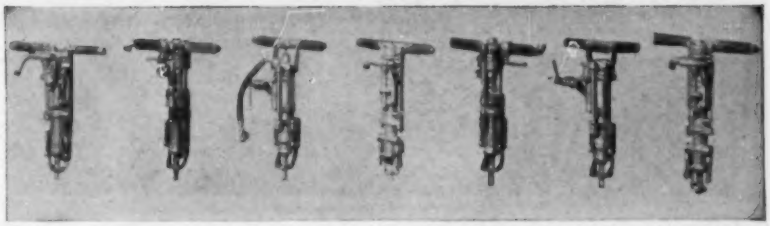
HERCULES POWDER COMPANY
INCORPORATED
WILMINGTON, DELAWARE

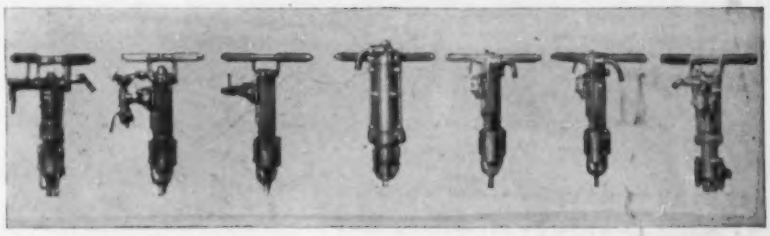
THE DRILL YOU NEED IS HERE

Cleveland Drills of each type and size are fast cutters, easy to handle, smooth in operation, and—they habitually use less air. Whether your job is primary or secondary drilling—or both—there's always a Cleveland that will save you money on drilling costs.

The Cleveland Line is complete. There are 14 sizes and types of hand hammer drills—5 sizes of drifters, or tripod drills, and the WD and DR Types of drill rigs—all suitable to one kind or another of quarry operation.

Give us a tough drilling job—we'll show you how the right Cleveland Drill will save you money. Our new catalog is for the asking. Did you get a copy of the revised Handbook? Yours is here for you—just fill in the coupon and mail.





At Right—One of 27 Cleveland Drills on a big road job in Ohio.

Bulletins 109 and 111 give all the information on Savings with Cleveland Drill Rigs.



THE CLEVELAND ROCK DRILL CO.

3738 East 78th Street Cleveland, Ohio



THE CLEVELAND ROCK DRILL COMPANY
3738 East 78th Street, Cleveland, Ohio.

Gentlemen:—Please send me the "Driller's Handbook."

Name.....

Company.....

Address.....

We are now using the following types of machines:

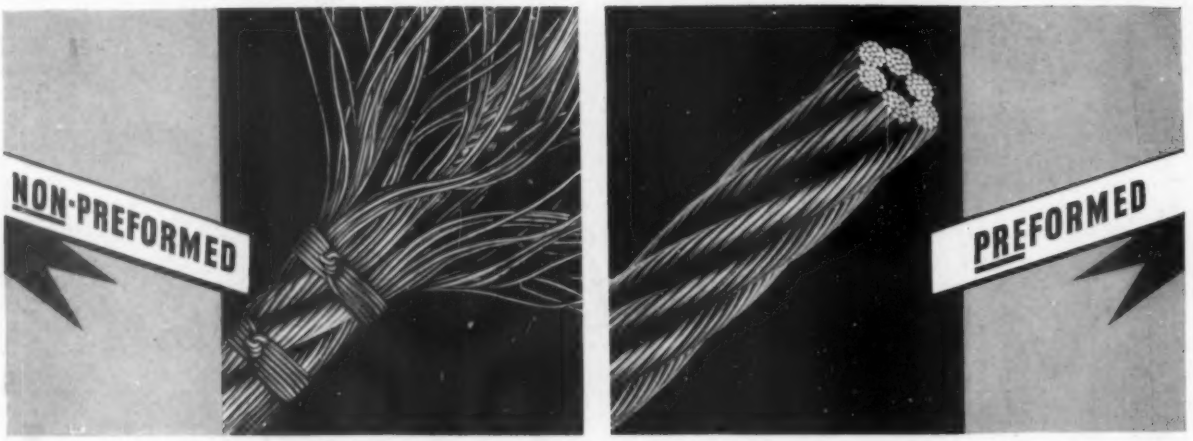
Hand Hammer Drills.....

Paving Breakers.....

Clay Diggers.....

Back Fill Tampers.....

Wagon Drills.....



THERE ARE SEVERAL REASONS WHY WE RECOMMEND *Preformed* WIRE ROPE

The foremost reason for recommending preformed wire rope is that for many applications it gives much *greater dollar value. . . .* But there are many other reasons, too. For one: it is *safer* for the workmen to handle.

Broken crown wires don't bristle out to jab men's hands. Then too, the preforming process tends to *eliminate the destructive internal stress.* This elimination also means that preformed rope . . .

- **requires no seizing**
- **resists kinking**
- **is easier to splice or socket**
- **is much easier to handle**

AMERICAN CABLE COMPANY, INC.
AMERICAN STEEL & WIRE COMPANY
BRODERICK & BASCOM ROPE CO.
COAST CABLE COMPANY
E. H. EDWARDS COMPANY
HAZARD WIRE ROPE COMPANY
A. LESCHEN & SONS ROPE COMPANY
MACWHYTE COMPANY
PACIFIC WIRE ROPE COMPANY
ROCHESTER ROPES, INCORPORATED
JOHN A. ROEBLING'S SONS COMPANY
UNION WIRE ROPE CORPORATION
WICKWIRE SPENCER STEEL COMPANY
WILLIAMSPORT WIRE ROPE COMPANY
WIRE ROPE CORPORATION OF AMERICA
WIRE ROPE MANUFACTURING & EQUIPMENT CO.

Check the Advantages of BLAW-KNOX TRUKMIXERS

- ✓ DEPENDABLE PERFORMANCE
- ✓ QUALITY CONCRETE
- ✓ MAXIMUM PROFITS

- The consistently better concrete which you can produce and deliver with Blaw-Knox TRUKMIXERS and Agitators will bring a greater share of the available concrete business to your plant.

We would like to tell you why Blaw-Knox Trukmixers not only get business for you, but save you money in low depreciation and maintenance.

BLAW-KNOX COMPANY
2035 FARMER'S BANK BUILDING PITTSBURGH, PA.
Offices and Representatives in Principal Cities



BAY CITY PERFORMANCE HAS SOLD OUT PRODUCTION FOR MANY WEEKS AHEAD

and still the orders pile up!



for Bay City "20"

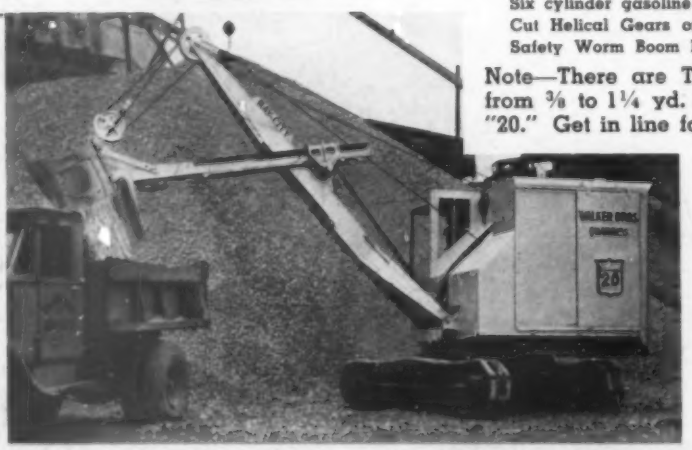


full revolving—full 3/8 yd. bucket—safe 4-ton crane loads . . . . . .

Yes—we're chock-a-block with orders for weeks ahead, and proud of it! It goes to prove that Bay City "20" is the biggest buy in small shovels today. For here's a "Big-little" shovel that has features of construction and operation found in no other ⅜-yarder. It tops its field in its weight and class. Look over these features—use your own judgment!

- Compact Design—Yet plenty of elbow room.
- Elimination of useless "dead weight"—by alloy steels and heat treating.
- Anti-friction bearings—on all machinery shafts and boom point sheaves.
- Chain Crowd—positive and independent—costs more but worth it.
- Drop Forged crawler shoes (14" wide) long wearing life.
- Unit Cast Car Body and Machinery Table of nickel-manganese steel, totally heat treated—available on no other light ⅜ yd.
- Six cylinder gasoline or Diesel Power—"E-Z" Clutch Control.
- Cut Helical Gears on all drum shafts—Helical gear drive, in oil.
- Safety Worm Boom Hoist—Positive Swing Lock—Cab in any position.

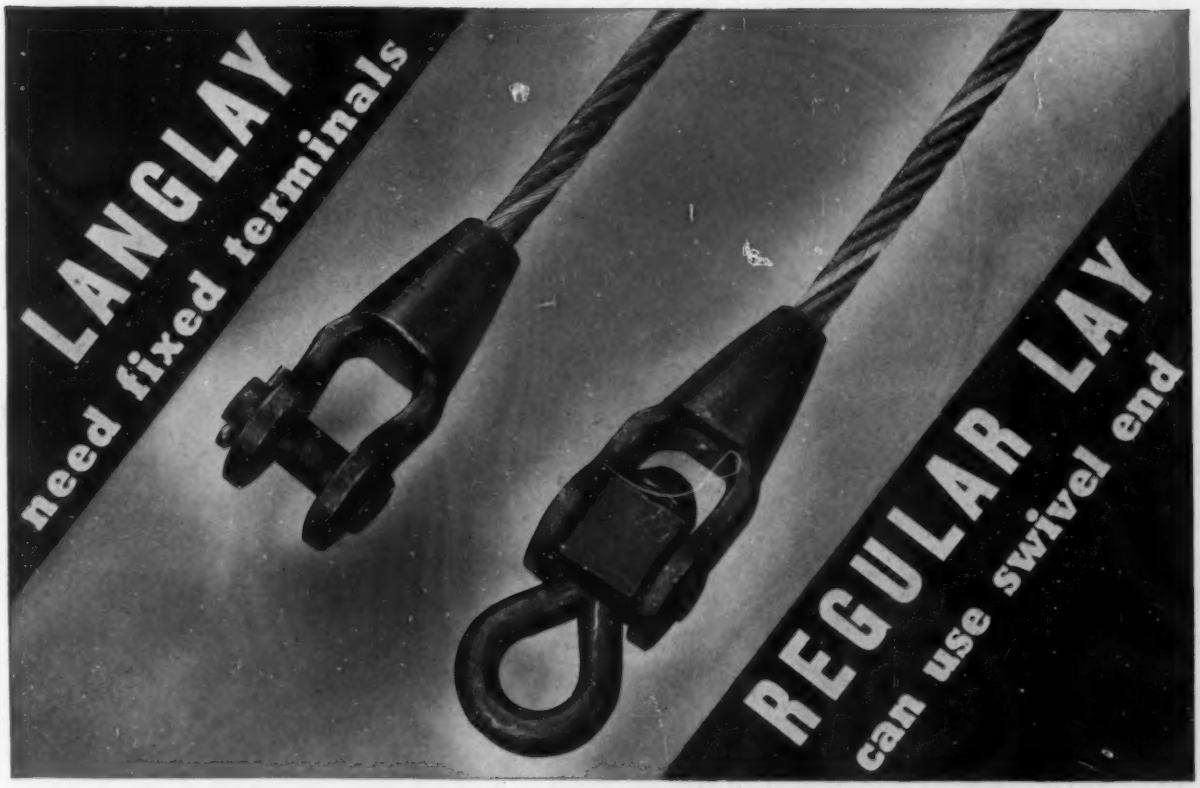
Note—There are TEN Models of Bay City Shovels, sizes from ⅜ to 1¼ yd. sizes—but no better buy than Bay City "20." Get in line for yours—for profits!





Recent Quantity Purchases:
N. Y. State Pub. Wks. Dept., 8
New Zealand Pub. Wks. Dept., 8

BAY CITY SHOVELS Inc. (Eastern Offices, Roselle, N. J.) BAY CITY, MICH.



Select the Rope that Fits Your Job

Langlay wire rope will give a longer life over small sheaves than Regular Lay rope of identical grade and construction. Langlay rope, however, has one definite disadvantage. It is made by twisting all individual wires and strands in the same direction thus causing a very decided tendency of the rope to unlay itself. A Langlay rope can only be used when both terminal ends of the rope are fixed. Never use a Langlay rope for a spinning load or with a swivel terminal. Let us know the nature of your service for wire rope and we will gladly recommend a construction that will give the longest possible life.

•

WICKWIRE SPENCER STEEL COMPANY, *General Offices:* 41 East 42nd Street, New York. *Sales Offices and Warehouses:* Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles; *Export Sales Dept.:* New York.

WICKWIRE SPENCER SALES CORPORATION, New York, Chattanooga, Tulsa, Portland, Seattle.

WIRE ROPE
by Wickwire Spencer





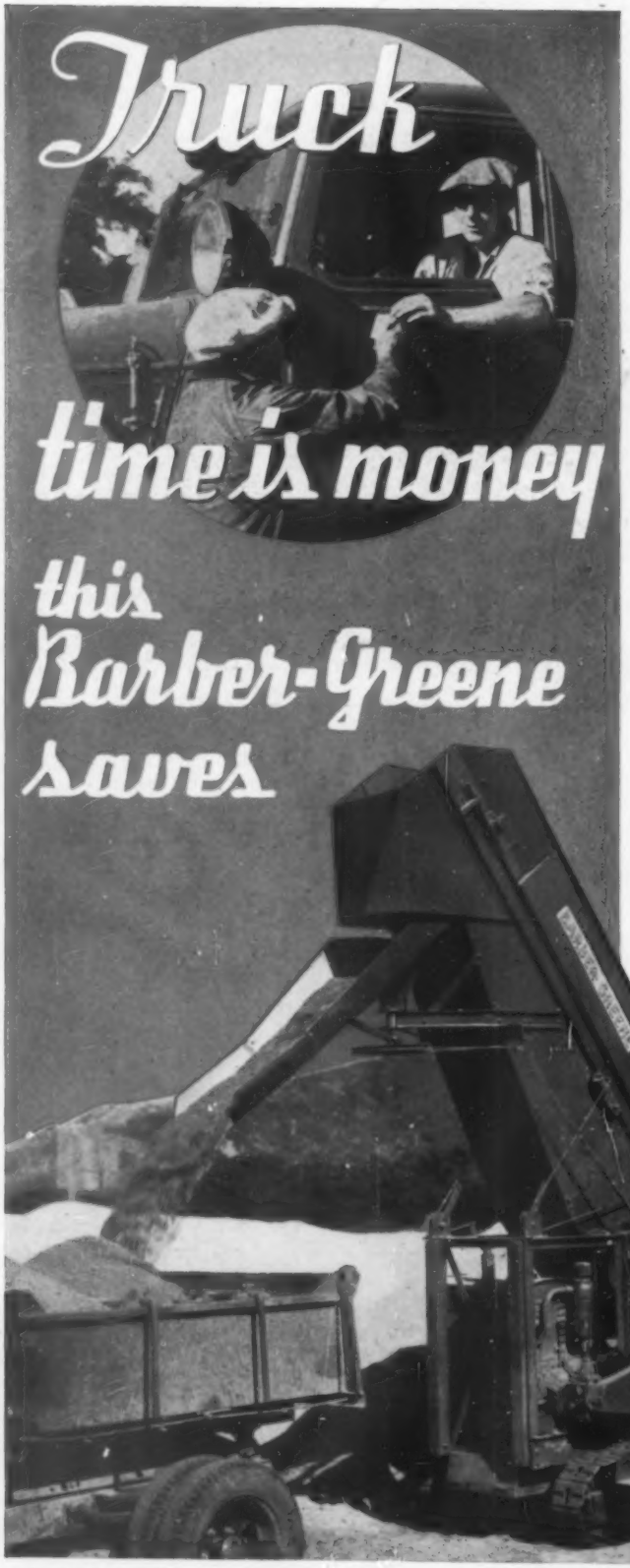
WICKWIRE SPENCER STEEL CO.
41 East 42nd St., New York City
Please send me reprints of previous advertisements which tell "How to make Wire Rope last longer".

Name_____

Firm_____

Address_____

City_____ State_____



IF you haven't carefully checked your itemized costs, you'll probably find "Truck Time" one of the biggest leaks in your job system.

Barber-Greene Model 82 Loaders have often made it possible to reduce the number of trucks. On other jobs truck time savings paid for the loader before the job was half done. A loader that's rated at 2 to 3 yards a minute — has been clocked at 4 — doesn't take long to load your biggest truck—can't cause appreciable truck waiting.

Consider your present loading system from this important angle—and then consider the many superior features of this Barber-Greene Loader: Synchronized Feeding, Tank Type Chassis Frame, Automatic Overload Release, Super Maneuvering, Slow Crowding, Parallelogram Oscillating Axle, and many others.

A card will bring complete details—there is no obligation.

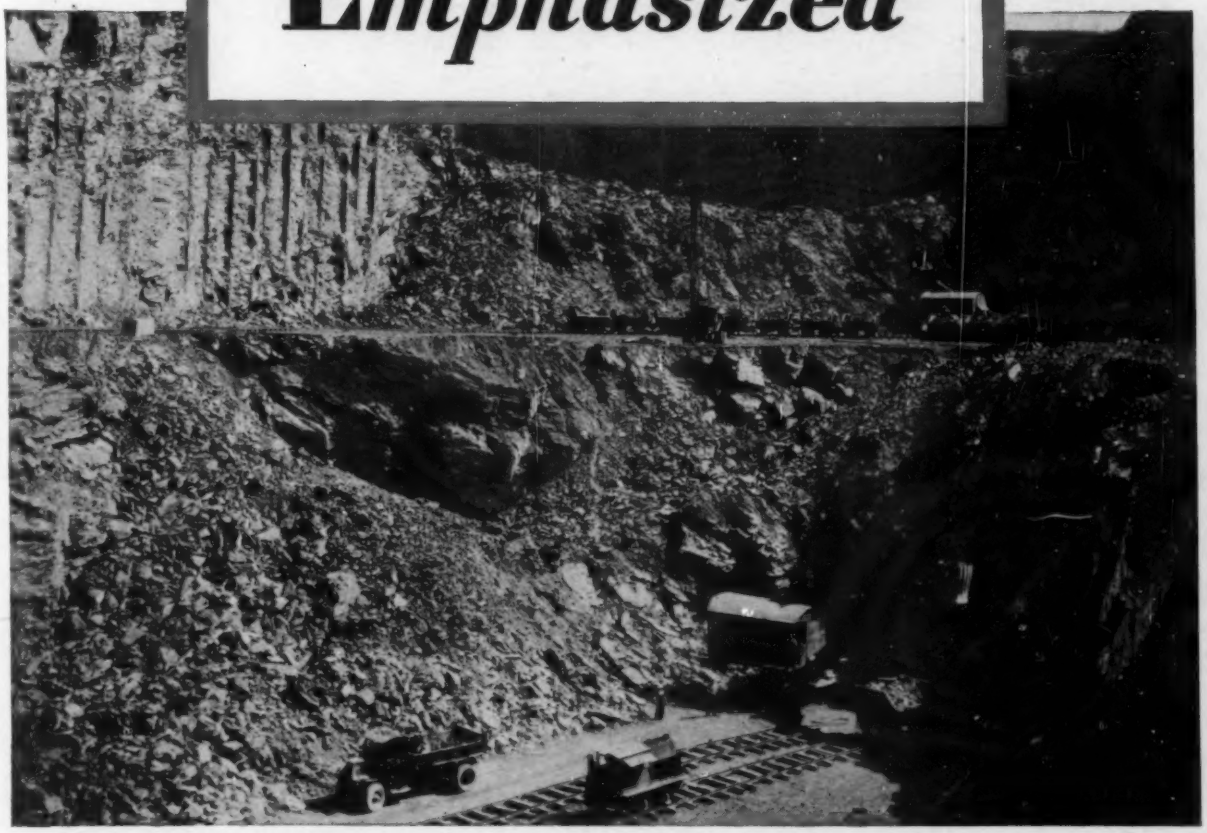
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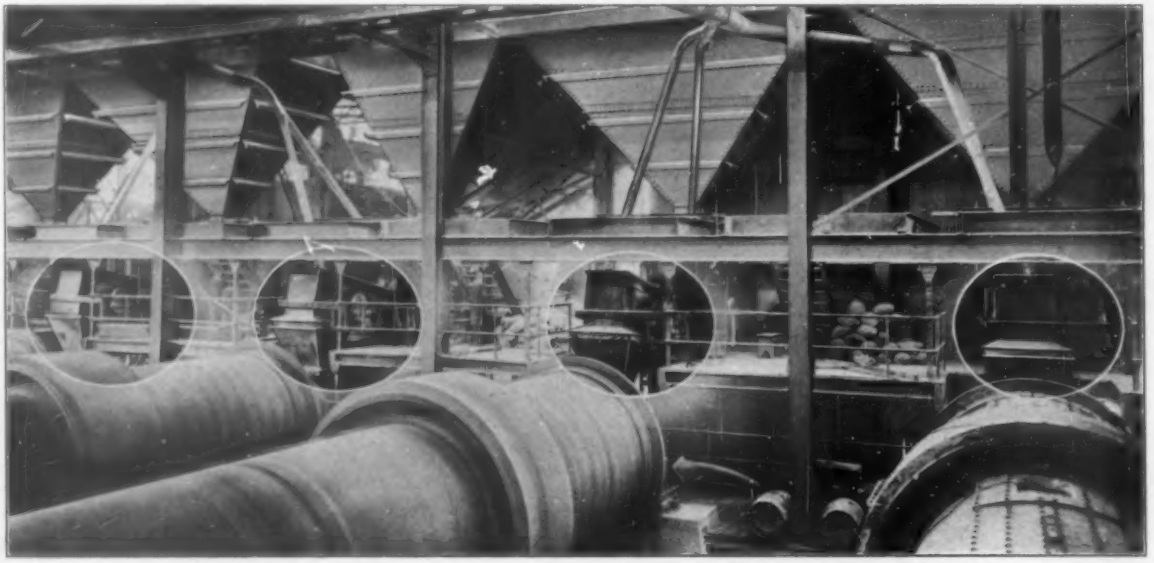
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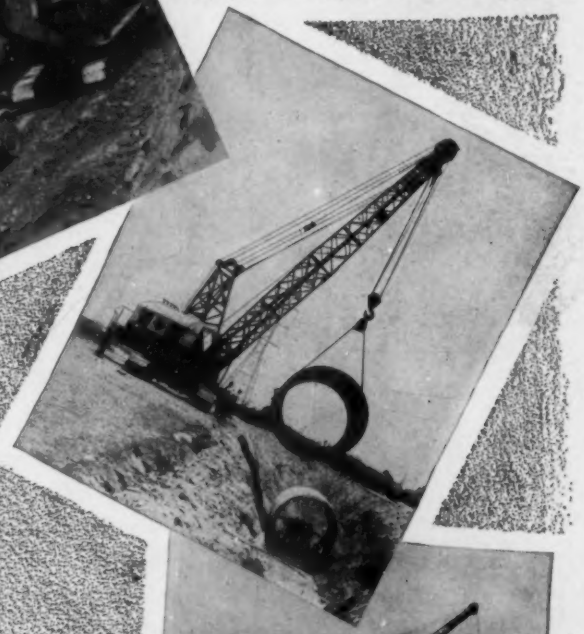
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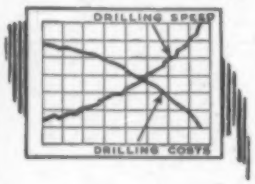
65 YEARS

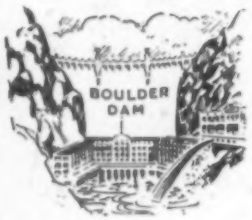


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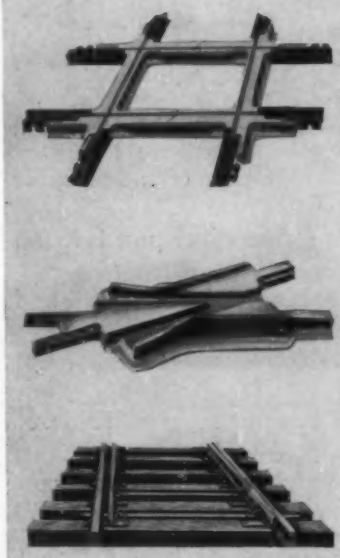
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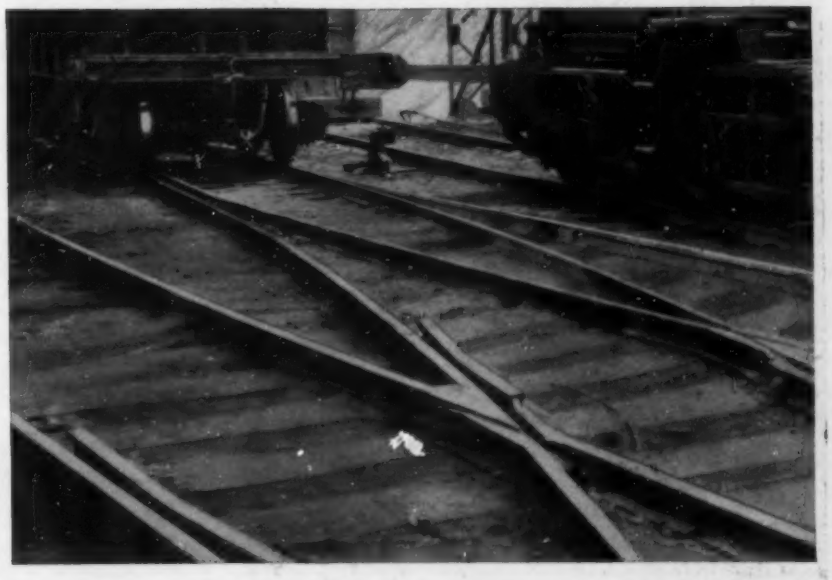
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Rock Products

WITH WHICH IS INCORPORATED CEMENT and ENGINEERING NEWS FOUNDED 1896 . . .

Volume XL | Chicago, January, 1937 | No. 1

CHEER UP! Political Outlook Is Probably Not so Blue as It Looks

EMPLOYERS in the rock products industry, in a large majority of cases, are willing and anxious to continue economic experiments that are soundly conceived and honestly designed to remove some of the faults of the capitalistic system. Of that we are firmly convinced from a careful study of the annual questionnaires, which our many good friends took the time and trouble to answer so completely. And we believe these are typical of the sentiments of leaders in industry generally.

However, nearly all producers are in a state of bewilderment as to what the New Dealers have in mind, and many doubt if the President and his present advisers know themselves what they are trying to accomplish. "Mr. Roosevelt is not and never was a practical business man, from what I have heard of his business ventures prior to his assuming the Presidency; and it is this lack in his make-up that deprives him of the good judgment in 'business management' that he shows in other objectives—notably in his seeing where business has failed in its relation to labor. The good and the badly managed business are all one to him." Thus writes a good, old philosopher-friend and producer, and with that sentiment we believe every interested observer agrees.



As believers in a democratic form of government producers of rock products, like the great majority of all other American business men, doubtless are convinced that the President has amply demonstrated his popular support for the New Deal; and they are ready to help him obtain his objectives, insofar as these can be identified and insofar as their judgments and their consciences will allow. This is admirably expressed by another producer (in the South), whose sentiment is also typical: "Undoubtedly business is going to be more tolerant of reform measures, but at the same time we feel that there have been so many mistakes made under the New Deal that business will be cautious to the extent that reform measures will be retarded. Although the New Deal has helped our business materially, we would prefer to be more cautious and go slower with changes, than will be the case in the next four years."

An undertone of resignation rather than of wholehearted coöperation is quite evident. It is apparent, though, that with a little tactful encouragement the President *could* win the coöperation of a great mass of business men. To do so he has but to give some evidence that he is capable of understanding a business viewpoint; of being able to see that all labor employed in industry is not of the sweat-shop type with which Mrs. Roosevelt and her friend, Madame Perkins, are so familiar from their slumming excursions in New York City.

No doubt the President thinks clearly in abstract terms of some of the faults of business management. They are not new to business men, but business men think of them in concrete terms as they apply to themselves. A meeting of minds without mutual sympathy for each other's shortcomings is impossible. The President's chief aims appear to be: (1) a stable money; (2) wider distribution of the necessities and luxuries of life; (3) elimination of a variety of unfair tactics in business. To all these business men subscribe. They are not unobtainable. These aims are all interrelated; and it appears to most business men that the New Dealers have so hopelessly jumbled them together as to confuse the President and his official family, not to mention Congress, which usually is only another name for confusion.

It is obvious to many business men in this industry that what business needs is *encouragement* to correct abuses, not attempts to wipe them all out in one magnificent gesture. They know that such reforms are not accomplished by passing legislation. As one able commentator says about the Robinson-Patman Act: "Laws should seek only to translate into statute a crystallization of conception of conduct which has so developed through experience as to be the general attitude of mankind. Laws should not be ahead of thought but should be behind it."

The very meaning of democracy is the *voluntary* acceptance and observance by all of laws that a majority adopts. If a large minority does not understand or believe in the spirit of these laws, it can not be made to observe the letter of them, save by civil commotion, dictatorship and tyranny. Laws that are not, and in the case of many New Deal laws—not being understood, can not be accepted in spirit and observed in the letter are a mockery and a menace to the democratic form of government and to the nation.

Without doubt no one realizes these things better than the President. But he knows, too, what some of his critics in business apparently overlook, that all these various efforts at reform legislation, or in economic experimentation, are an extremely effective method of education. Whatever his shortcomings, as a business man, it must

be admitted that he has stirred up business men and caused them to do more thinking, and more talking and writing about the broader phases of business and industry than any other man who has occupied his high office with the possible exception of his illustrious namesake, Theodore Roosevelt. And the end is not in sight.

It is quite possible that he is well aware of his own shortcomings as a business manager and is actually trying to *prod* business men into doing more thinking and broader planning for themselves. That does not mean that he wants them merely to apply brakes, but more likely actually to take over the continuance of his economic experimenting. Since business men have not yet regarded him with sufficient confidence to offer to do this, naturally we don't know whether our theory is mere supposition or really is based on actualities. Anyhow, we would like to see what would happen if business men did accept this theory!



• • •

Conflicting Philosophies

Back of the misunderstanding between the President and business men are conflicting fundamental philosophies—one purely American, the other tinged by relatively recent European developments. Probably, to proceed in peace and prosperity, we shall have to merge them into a philosophy that is more generally acceptable than either. Winthrop W. Aldrich, chairman of the board of the Chase National Bank, born aristocrat and descendant of a long line of New England Americans, recently expressed briefly the philosophy that is still held by the majority of successful American business men—that expressed in the Declaration of Independence, and preserved in the Constitution. Mr. Aldrich said: "We have too deeply ingrained in us by practice and inheritance the conception that certain individual rights are indeed inalienable, that no material advantage, no promise of material security, is worth their sacrifice or substantial impairment." But Donald R. Richberg, who typifies a later type of intellectual immigrant American, infected with foreign philosophies, has said at various times and places: "They talk as though rights were inherent in individuals. They are not. The rights of property did not come by nature, they were created by law. • • • • • Every single right and protection the individual has in our society has been created legally." Hence, he naturally believes they can legally be taken away.

Mr. Aldrich erred only in referring to these as *rights*—they are actually *instincts*—and they *did* come by nature. "The urge to individual personal survival here and now is the prime instinct of every living thing—man included. • • • • • The urge to survival may fairly be regarded as the most fundamental attribute of living things. • • • • • It may be well to point out at the start that in its essence this urge to survival is rather completely and uncompromisingly selfish. To the best of its ability the individual organism so conducts its affairs as to continue living just as long as possible, regardless of what other organisms may do or think about it. When extinction threatens, every resource is brought to bear to fend it off. Basically this is what underlies the struggle for existence.

"When replaced by altruism or 'mutual aid', it is due to complex psychological elements. • • • The most obvious of these amounts really to a more enlightened self-interest—that is to say, a belief that for the present and until times get worse, it will be likely to conduce more effectively to individual survival to play along with and help one's neighbors in the crowd." ‡



Because of this increasing *enlightened self-interest* mankind has become more and more socially minded as populations increase through his biological urge to reproduce. He has learned, for example, that he can not live and survive individually in these densely populated centers without coöperating with his kind to provide pure water supplies, sanitary sewers, and other things for public health or safety. The more complicated the means of getting one's living has become, the more he has learned that some things are beyond his capacity as an individual. But let every altruist, the President included, remember that without this *primal instinct to survive*, there would be no survival of individual, nation or race. For, "if there is one thing certain in the science of biology, it is that no species or variety of plant or animal has long survived where the individual was intrinsically incapable of making its own living. There is somewhere a biological limit to altruism, even for man." ‡

The President and his New Dealers have evidently set out to find that limit. As the type of human beings, in whom the biological urge to survive is strongest, successful business men can well afford to help find reasonable limits to altruism; but they are too wise in the ways of the world to believe that Utopia can be brought about under the New Deal, or under communism, fascism or any other kind of government yet devised by men. Moreover, business men know instinctively that a successful business organism, or organization, composed of individuals, has the same urge to survival as the individuals who compose it; or business organizations, like individuals, simply would not survive on this unfeeling planet of ours.

A philosophy of abundance in which no one will have to work, much, where the results of the work of the competent and the thrifty are stolen from them and given to the incompetent and improvident just doesn't agree with the known laws of nature; and the business men of the country who object to such a philosophy are on solid ground, for nature itself in the end would prove it. Still, it should be equally obvious that we have not reached the limit of 'mutual aid'.

• • •

Hours and Wages

A large majority of producers believe an 8-hour day and a 40-hour week is the practical minimum under present day conditions. A few still want 10-hour days, or even 12 hours. A few believe a 6-hour day and a 30-hour week will come eventually; a very few believe they could, if every one would, adjust their operations to this now.

‡ "Biology and Human Trends," an address by Raymond Pearl, The Johns Hopkins University, *Jour. Wash. Acad. Sciences*, June 15, 1935.

The chief objection to short work days and weeks comes from small aggregate producers in isolated localities with probably not more than a dozen employes each. Their employes work only for short seasons, or intermittently, and *they want* to work the longest day and the longest week possible for the largest annual earnings. They would have the same urge, irrespective of wage rate.

The number of such operations in all industries is legion. Those employes own their homes, have their small farms or gardens, usually are close to their employers; they will never be members of any labor union; many would go to jail for their employers. Therefore the apparent New Deal conception, that by giving organized labor a free hand, the era of abundance will automatically result is "all wet." Organized labor will never constitute but a fraction of all who work and it will merely raise the prices at which all must buy their necessities. Given a free hand, it will destroy any possibility of a stable money medium.

Much has been said by the New Dealers about the responsibility of industry to provide employment and abundance. Nothing is said about the responsibility of organized labor to provide abundance or even to prevent unemployment and want. Yet when organized laborers insist on constantly higher wages and closed shop for those who are already paid relatively high wages, they create unemployment both directly and indirectly; (1) directly by driving employers to produce with less labor, and (2) indirectly by boosting the prices of commodities beyond the capacity of large sections of the public to buy. Theoretically, perhaps, one should offset the other, and prices should remain constant. Actually, organized labor is more interested in raising its own wages than in the effect of this on the general welfare. General increase in prices, if the President is to be believed, is not a goal; the goal is wider distribution of wealth, wealth being these same commodities or the products of labor, not paper money, which has no intrinsic value and is merely a fluctuating measure of labor—labor itself being the real cost of all commodities. Hence, it is obvious to business men that the President cannot keep the value of money stable if it requires more and more of it to buy the same amount of the same commodity from year to year.

There are, of course, many low-income groups who should be sought out and helped toward better incomes. Wage increases should begin with these and not with those already at the top. If business leaders lack altruism, we should like to ask the President if he thinks leaders of organized labor are any more altruistic. His educational campaign to promote more altruism in industry should include them, or it will most certainly fail.

Practically all producers expect to pay higher wages in 1937. Many cheerfully increased wages and paid bonuses in 1936. A majority anticipate rising costs all along the line—all the way from 10 to 30% over 1936 costs.

A few expect increased volume to take care of these increased costs. Less than half of those reporting expect to take care of increased costs by increased prices in 1937. The reasons are obvious. There is a lot of carry-over business at old prices; there is a lot of competition in industries that still use only half of their capacities and it takes a long time to establish increased prices in any capital goods industry. Undoubtedly there will be decided price increases in consumer goods, and these seem to justify wage increases for nearly all workers.



How then can these industries hope to profit? Do they want the authority "to coöperate" to get back at least their costs by some form of price-fixing? The almost universal verdict is "No." With few exceptions they want nothing like NRA, or any form of government price control. Most of them believe voluntary coöperation will help in establishing fair prices; but above all else they want outstanding industrial leadership which can adequately and effectively present the case of employers to the government and to the public to help reëstablish in this confused world the few sound principles of economics that are known. Many express the opinion that union labor is far more effectively organized than employers. This can be explained by the fact that the more successful the man in industry, the greater is his biological urge to individual existence; or, very probably, he is successful in business because he has this urge the strongest. The less successful men naturally flock together under almost any kind of leadership. But the successful business man should be the more intelligent; therefore he should be capable of more enlightened selfishness. He has the stronger foundation to build on. He *can* be a leader of men as well as successful in industry.

• • •

Robinson-Patman Act

Is the Robinson-Patman Act considered a step toward a cure for too much individualism, by attempting to standardize pricing policies? The industry is about evenly split three ways: (1) one-third say "yes"—many with qualifications; (2) one-third say "no"—many in violent language; (3) one-third admit they haven't sufficient comprehension of what it is all about to have an opinion. Of course, practically no one believes it workable in its present form.

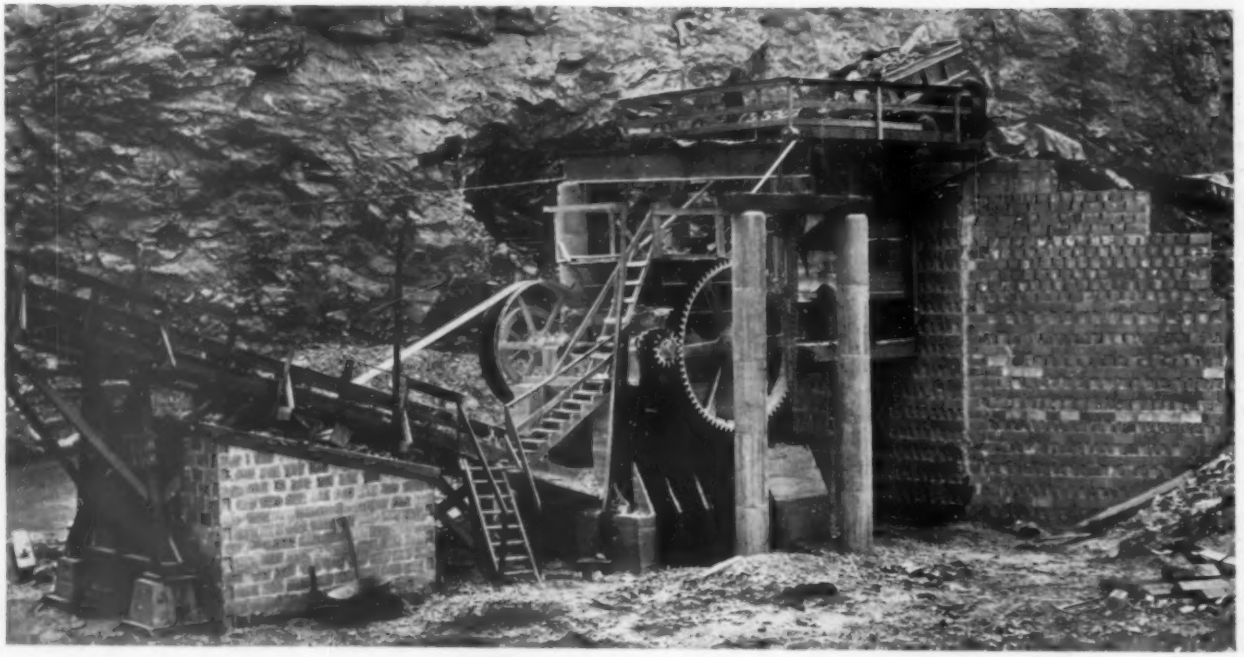
Some comments are: "Seems to offer an excellent opportunity for voluntary self betterment if industry so elects. I place greater stress on the possibilities of voluntary conformance than on enforcement." On the other side: "A most deplorable piece of legislation. This act seeks to demand standards of conduct that are foreign to business experience and conduct. • • • • This act leaves nearly every business man in jeopardy; even though he seeks to obey it, he finds strict observation difficult, if not impossible. In my judgment the act needs clarification, greater leniency as to its requirements. The situation will become more dangerous to industry without compensating benefit under the proposed Patman Act."

Other comments are: "Pregnant with danger and viciousness" . . . "Could result in good if enforceable. In its present form it will ultimately be so generally violated that it will have to be drastically amended or repealed" . . . "Only gives chiselers a new horse to ride" . . . "Does not stop price-cutting. It does stop price discrimination. In spite of it some of the large producers (of lime) have different prices applicable to different markets, different terms of sale applying to certain circumscribed areas, using a low price on one commodity to sell the whole job or force the sale on all commodities in their line to be used on any given project."

(*Continued on p. 61*)

FIRST PRIZE PICTURES—

James H. Grove, Jr.
M. J. Grove Lime Co.
Frederick, Md.

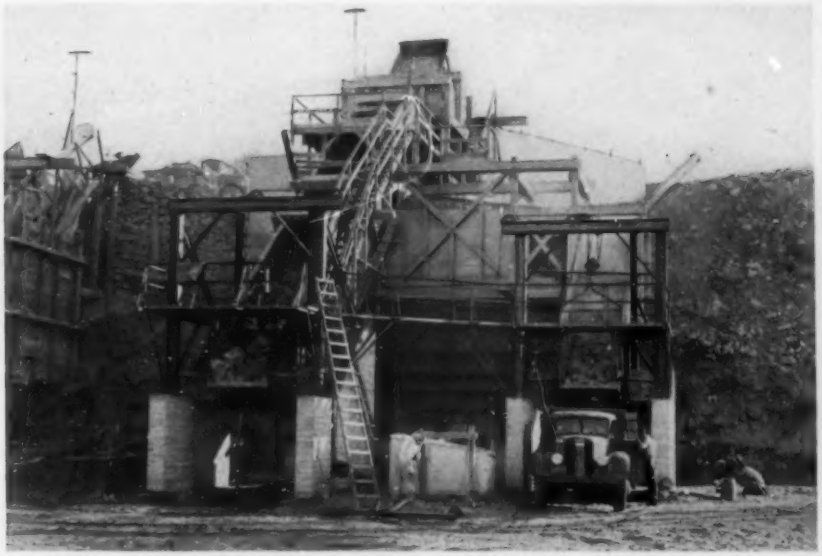




SECOND PRIZE PICTURES—

Louis Cassayre,
Basalt Rock Co., Inc.
Napa, Calif.





On This Page

Louis Cassayre, superintendent, in these four views shows the new screening plant of the Basalt Rock Co., Inc., at Napa, Calif., designed specifically to supply rip-rap for river bank protection. The sizes produced are Class A face rock, 1000 to 5000 lb. each; Class B, 25 to 1000 lb.; Class C, dust to 500 lb., with dirt removed. Trucks dump at top of plant to 15-yd. hopper. Link-Belt 5 ft. x 10 ft. reciprocating feeder discharges to a manganese-steel "tuning fork" grizzley, set at 35 deg. from horizontal; grizzley spacing is adjustable. Oversize goes by gravity to loading chute. Throughs go to 5 x 14-ft. Link-Belt rotary screen, which makes other two separations.

(More details in a later issue)



On Opposite Page

James H. Grove, Jr., illustrates a quarry-floor primary crusher installation with 30-in., 423-ft. c. to c., belt conveyor, to avoid hauling quarry cars up an incline to the Frederick, Md., lime and stone plant of the M. J. Grove Lime Co. Trucks are now used for hauling in the quarry. The belt conveyor is at an angle of slightly more than 17 deg., rollers are Stephens-Adamson with Timken roller bearings; return idlers are Jeffrey; has a 35-hp. slip-ring motor with Texrope drive. Belt is 855 ft. long, made by Hewitt Rubber Corp., 7-ply; no stretch in nine months' operation.

(More in a later issue)



THIRD PRIZE PICTURES—

Robt. A. Harker,
Calrock Asphalt Co.
Santa Cruz, Calif.



Open-pit quarry of Calrock Asphalt Co., Santa Cruz, Calif., showing new Browning crane with 30-ft. boom, equipped with special skip, for loading trucks to crushing plant. Replaces hand loading and reduces quarry costs to about one-third of previous figure. Rock has to be selected by hand



Close up of special skip, of which 12 are in use. Tripping line can be seen in foreground, attached to back of skip. Skip holds 2 tons. Skips are placed on quarry floor for hand loading—minimum lift for loaders



Close-up of crane dumping into quarry motor truck. Advantages are reduced loading time, larger rocks handled, lower powder costs, less standing time for trucks, lower haulage cost, greater plant capacity

Editorial Summary—Prospects for 1937

(*Continued from p. 57*)

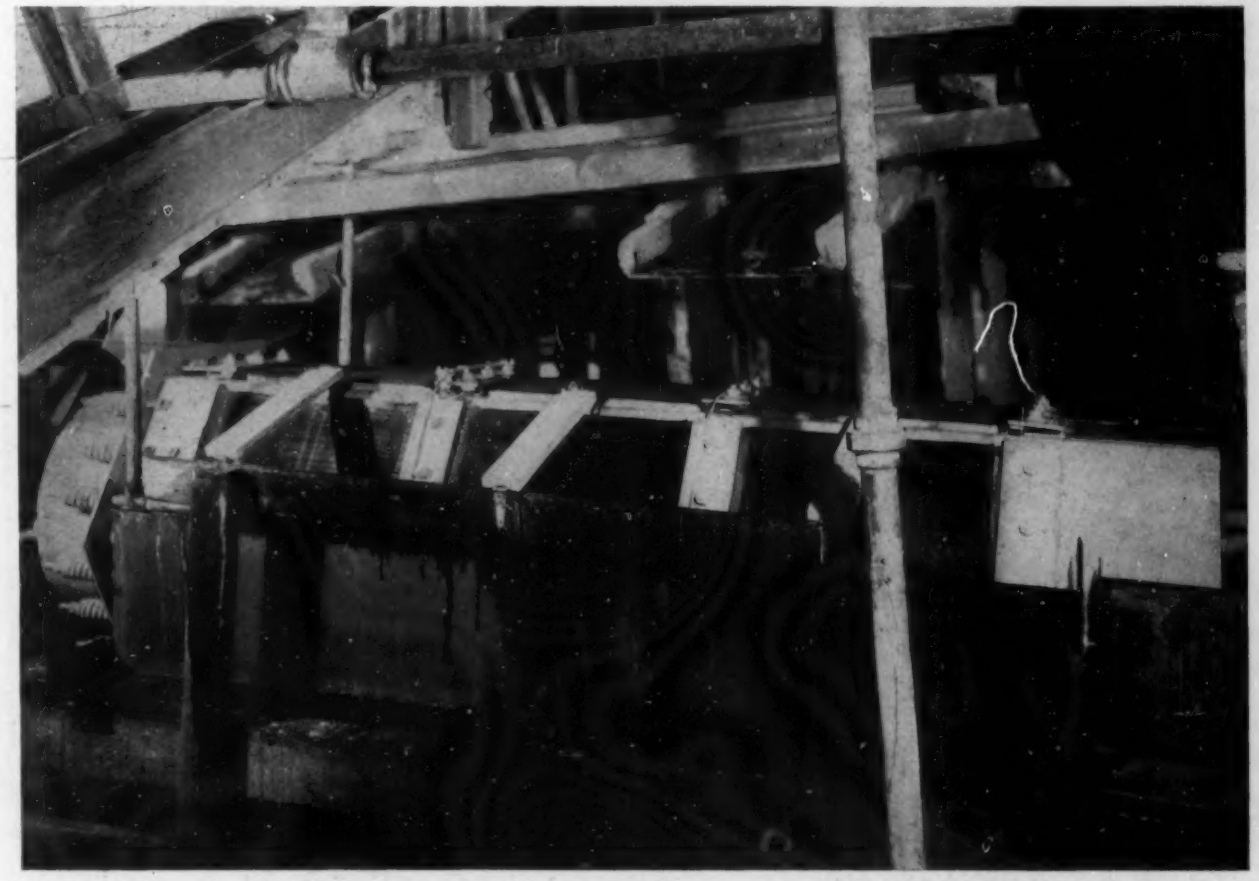
Production on the Increase

Over 90% of those reporting had increases in production in 1936 over 1935, ranging all the way from 5% to 200%. About 6% of the producers reported decreases, ranging to 5%; the others reported little or no change. About half of those reporting also had price increases ranging up to 90% over figures for 1935. The other half reported no change or decreases in prices ranging up to 25%. In nearly all instances except in the cement, lime and gypsum industries, prices are governed entirely by local conditions—something that the Robinson-Patman Act and no other law can ever control.

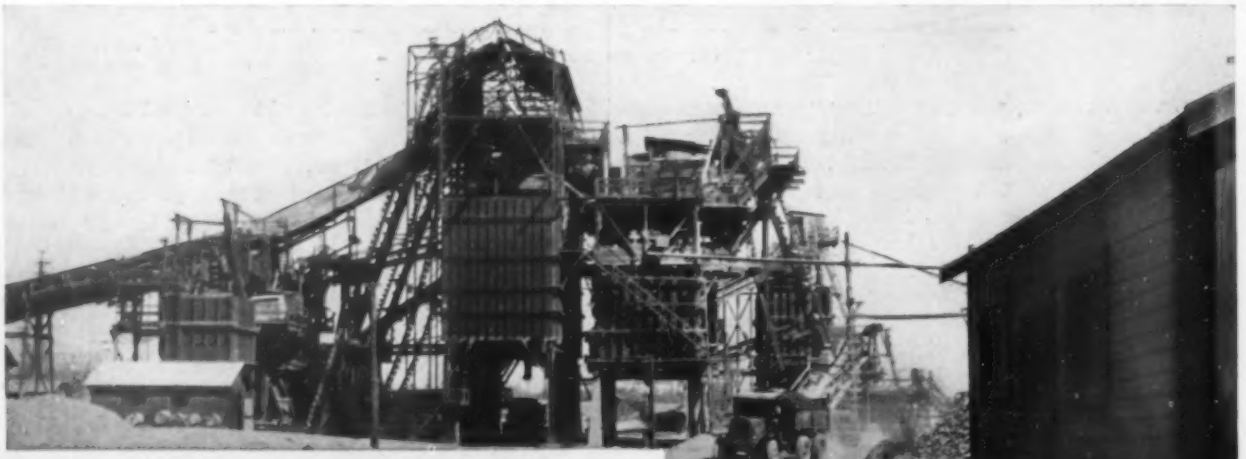
For 1937 almost all producers expect some increase in production, but not so much in percentage as was the increase in 1936 over 1935. Estimates of percentages of increase range from 5% to 500%, but 15% seems to be an average figure. The average increase in 1936 over 1935 was around 30%. Of course, as tonnages increase percentages will decrease for the same increment of tonnage, so that in all probability the expected 15% in 1937 will be approximately the same tonnage as in 1936.

Prices in 1937 are likely to be somewhat higher on the average than in 1936, although, as already stated, a majority of producers do not expect immediate returns of increased costs. We believe that most producers sincerely desire to hold prices as low as possible because of their unshakable conviction that to rising prices there is no end save in another business collapse. It is to be hoped *they* will have a little coöperation from the President in their honest attempt to achieve one of his apparent objectives, which we believe is to prevent another 1929.

In spite of the fact that average profits in the rock products industry in 1936 probably did not begin to compare with the average profits of many other basic industries—with a few exceptions—there was much activity in rehabilitation of plants, in some cases amounting to complete rebuilding. Moreover, although the prospect for even fair profits in 1937 is somewhat dubious, there is much more rehabilitation and rebuilding contemplated. Circumstances are driving all who expect to continue in business to modernize—higher wages, payroll taxes, higher costs generally, not merely of supplies and equipment, but of such intangibles as employers' liability insurance.

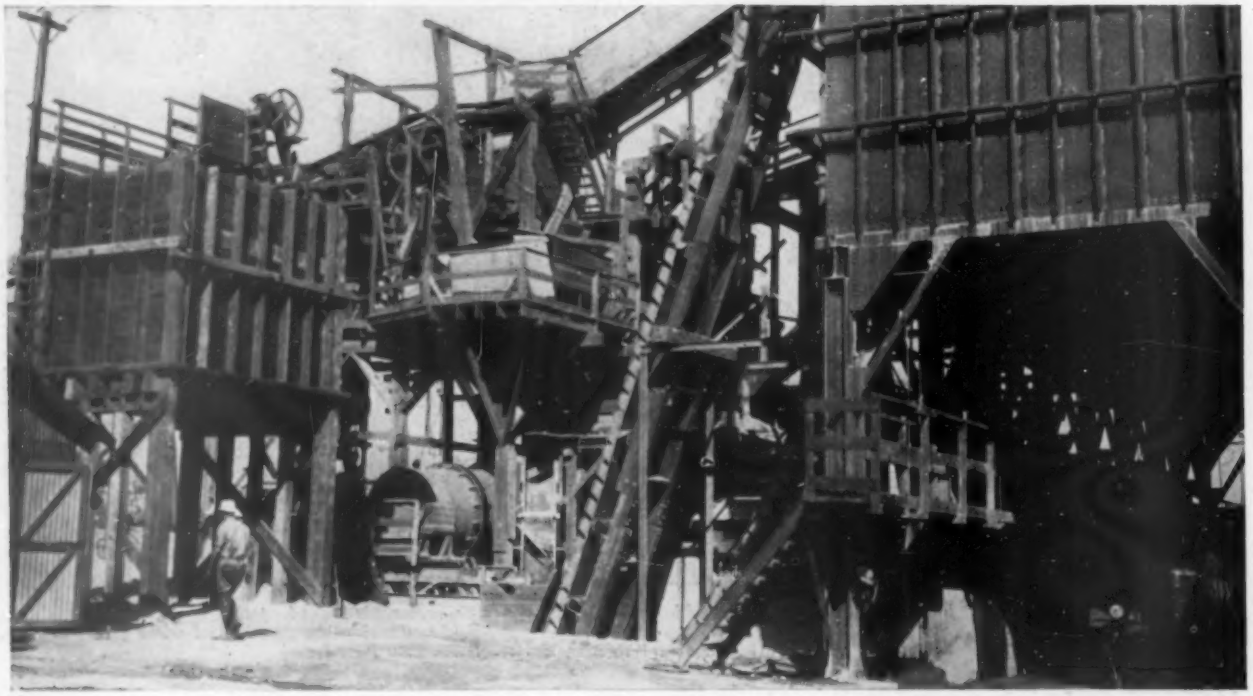


W. B. Harper, secretary, Crystal Silica Co., Los Angeles, Calif., illustrates here a new screen, developed at his plant, which he says is "revolutionary" in performance. Hexagonal, 3 ft. diam., 7 ft. long, made of spring-stretched, parallel, oil-tempered, steel wires giving 0.035-in. and 0.05-in. openings. Ingenious self-cleaning device. (More in a later issue)





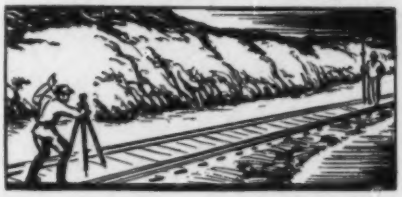
Consolidated Rock Products Co., Los Angeles, Calif., rebuilt and reopened in 1936 its No. 2 plant, Claremont, using steel for bin construction and introducing a new piece of equipment—a soft stone eliminator. It's a 6-ft. x 20-ft. steel cylinder with angle-iron shelves or lifters. The raw material is tumbled about in the cylinder at 20 r.p.m. until the soft material is disintegrated and afterward eliminated by screening. The feed is 5/7-in to 3½-in. and the capacity is about 70 tons per hour. (More in a later issue)





Gravel ballast plant erected in Nevada desert to supply ballast for the Western Pacific Railroad by the Utah Sand and Gravel Products Corp., Salt Lake City, Utah

BALLAST FOR DESERT RAILWAY PRODUCED BY UTAH Sand and Gravel Products Corp.



TO FULFILL a large ballast contract with the Western Pacific Railroad Co., the Utah Sand and Gravel Products Corp., Salt Lake City, Utah, built, in 1936, a sand and gravel plant especially designed for the purpose by the company's chief executive, Eric Ryberg, and the Los Angeles office of the Stephens-Adamson Manufacturing Co. We are indebted to Mr. Ryberg and L. R. Snow, office manager of the company, for the following data:

A Diesel-engine powered Northwest, Model 6, 1½-yd. shovel loads three International, C-60, 5-yd., dump trucks, which transport the material to the plant—an average haul of 1000 ft. Equipped as a dragline, the shovel also does what stripping is necessary.

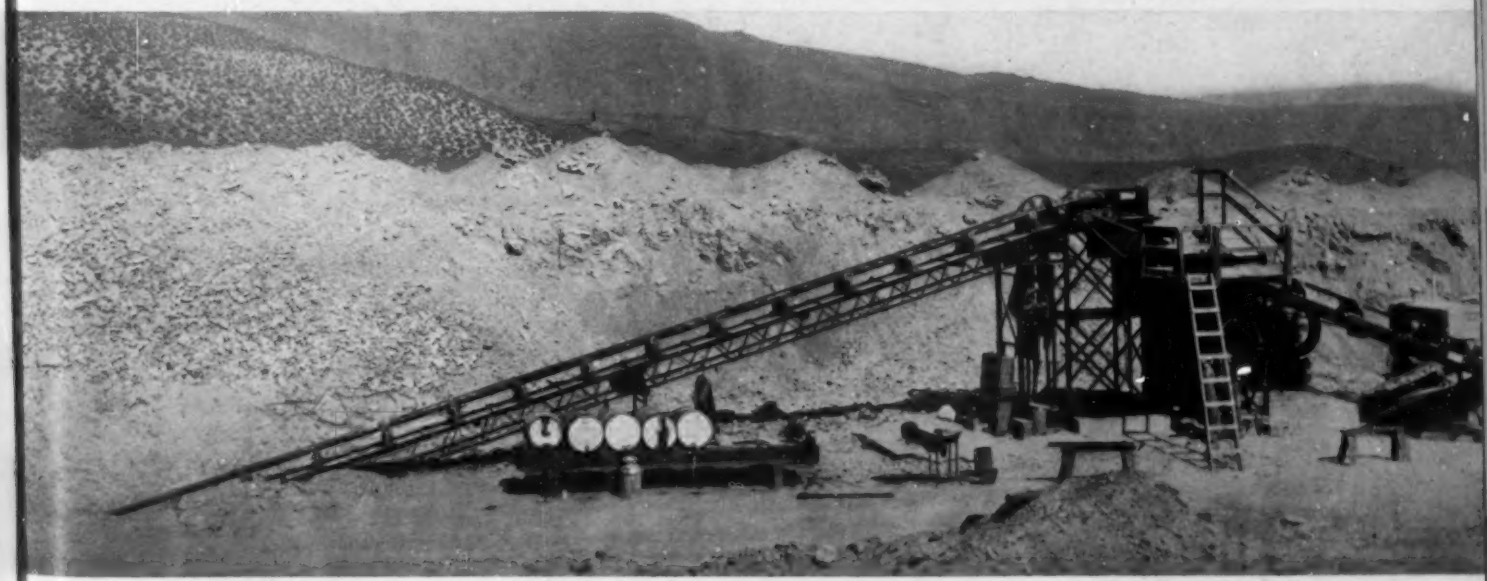
The trucks dump to a rail grizzley (spaced 12-in.). Material passing is fed by an S.-A. reciprocating pan feeder to a 30-in. belt conveyor. Oversize is broken by sledge hammers.

At the top of the screening plant a 4-in. bar grizzley takes out oversize, which is chuted to a 15x28-in. Alloy Steel & Metals jaw crusher. Fines and crusher discharge go to a 4x9½ ft. S.-A. double-deck vibrating screen, with 2-in. openings (top deck) and ¼-in. (lower).

The gravel is ballast and the fines waste, at present, although both gravel and fines can be placed in bins or stored in piles. Capacity is 125 cu. yd. of finished ballast per hour and 60 cu. yd. of fines.

Power is furnished by two D-13000 Caterpillar Diesel engines rated 100 hp. each. A D-4400 Caterpillar Diesel driving a 15-hp. electric generator furnishes electricity for night operation and for the camp maintained for an operating crew of 7 or 8 men and the cook.

Close-up of dry screening plant which is powered by two 100-hp. Diesel engines, shown in the background at the right





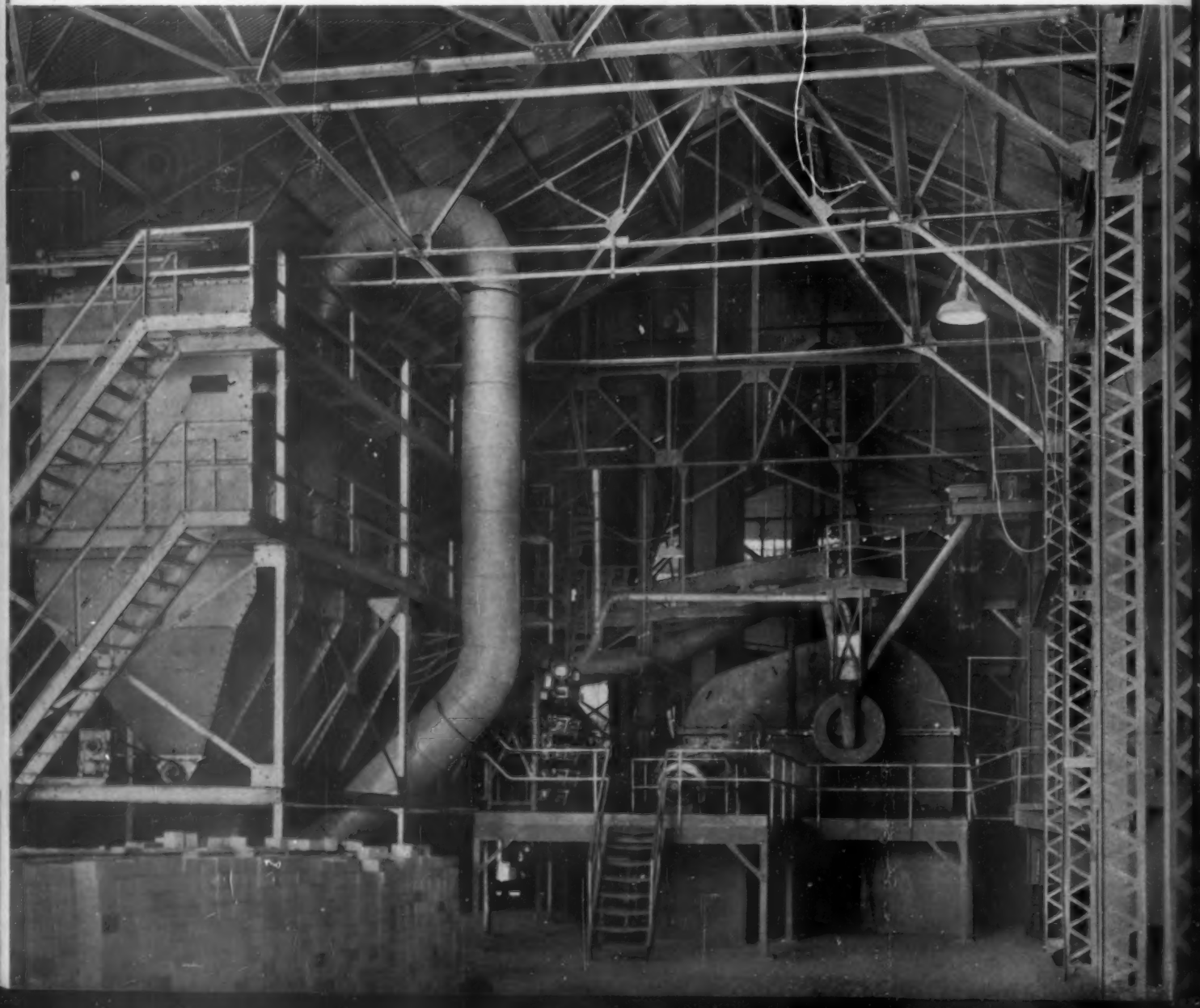
The three views herewith show improvements installed in a southwestern cement plant in 1936 by the Traylor Engineering and Manufacturing Co. They are typical of the character of cement plant rehabilitations recently made or now in progress. The view below shows the drive end of an 8x50-ft. compartment mill (lower right) illustrating new features, and Norblo dust collector installation. The upper view on the opposite page is a close-up of the mill showing discharge from first compartment. The lower view on the opposite page is another view of the same mill (right) and of a 10x8x220-ft. kiln. The mill is fed from the two hopper-bottom bins in the center, discharging through table feeders to a belt conveyor equipped with dust-collector inlets. Note that the left-hand bin has an electric vibrating device to maintain the flow. While not definitely known to the caption writer, it is assumed that this bin is for gypsum and the other for clinker.

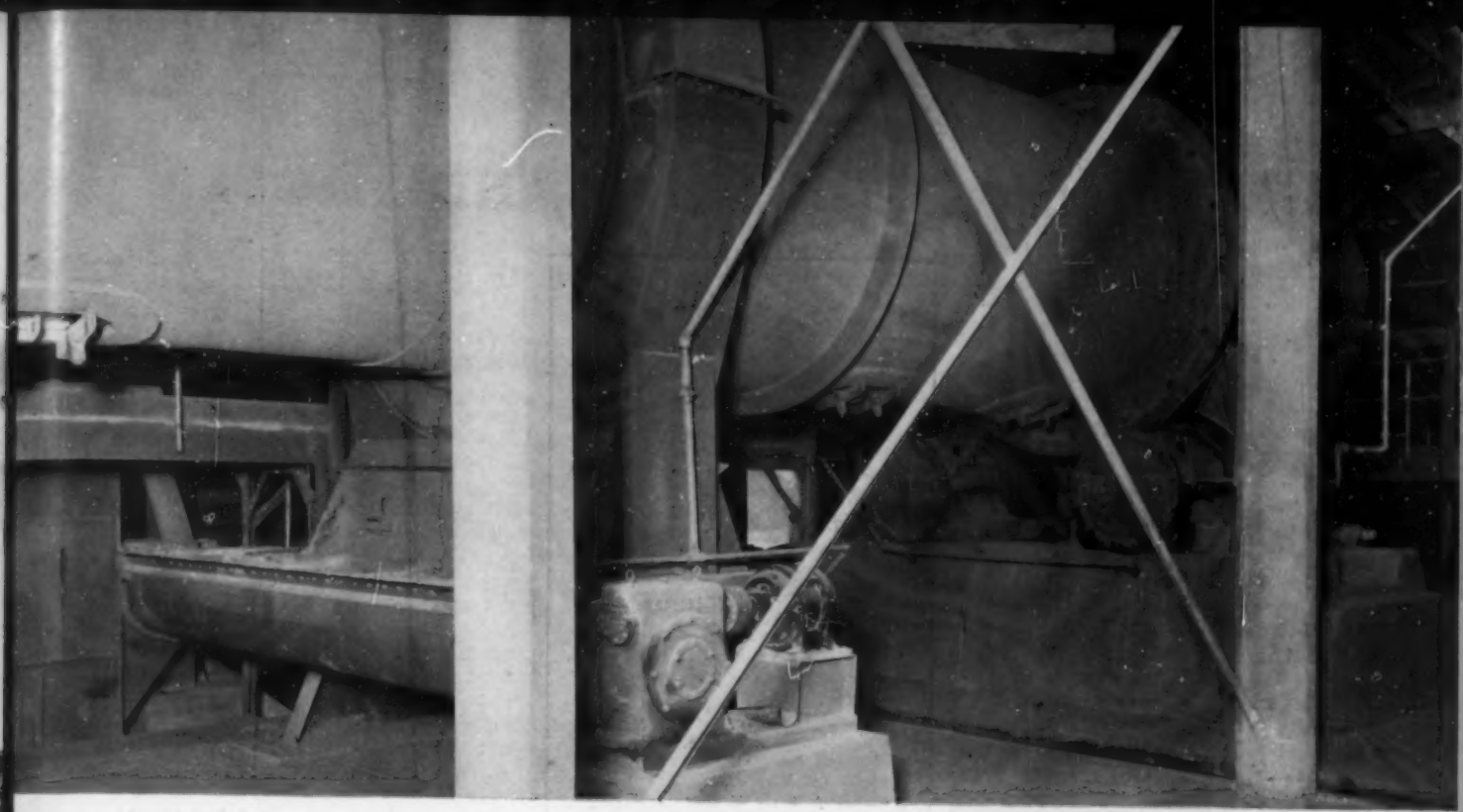
Other cement plant improvements in 1936 made by the Traylor Engineering and Manufacturing Co. included installation of a Traylor-Cheesman cooler and burner at the plant of the Idaho Portland Cement Co., Inkom, Idaho, and Colton-Lang recuperators at the Redwood City, Calif., plant of the Pacific Portland Cement Co.

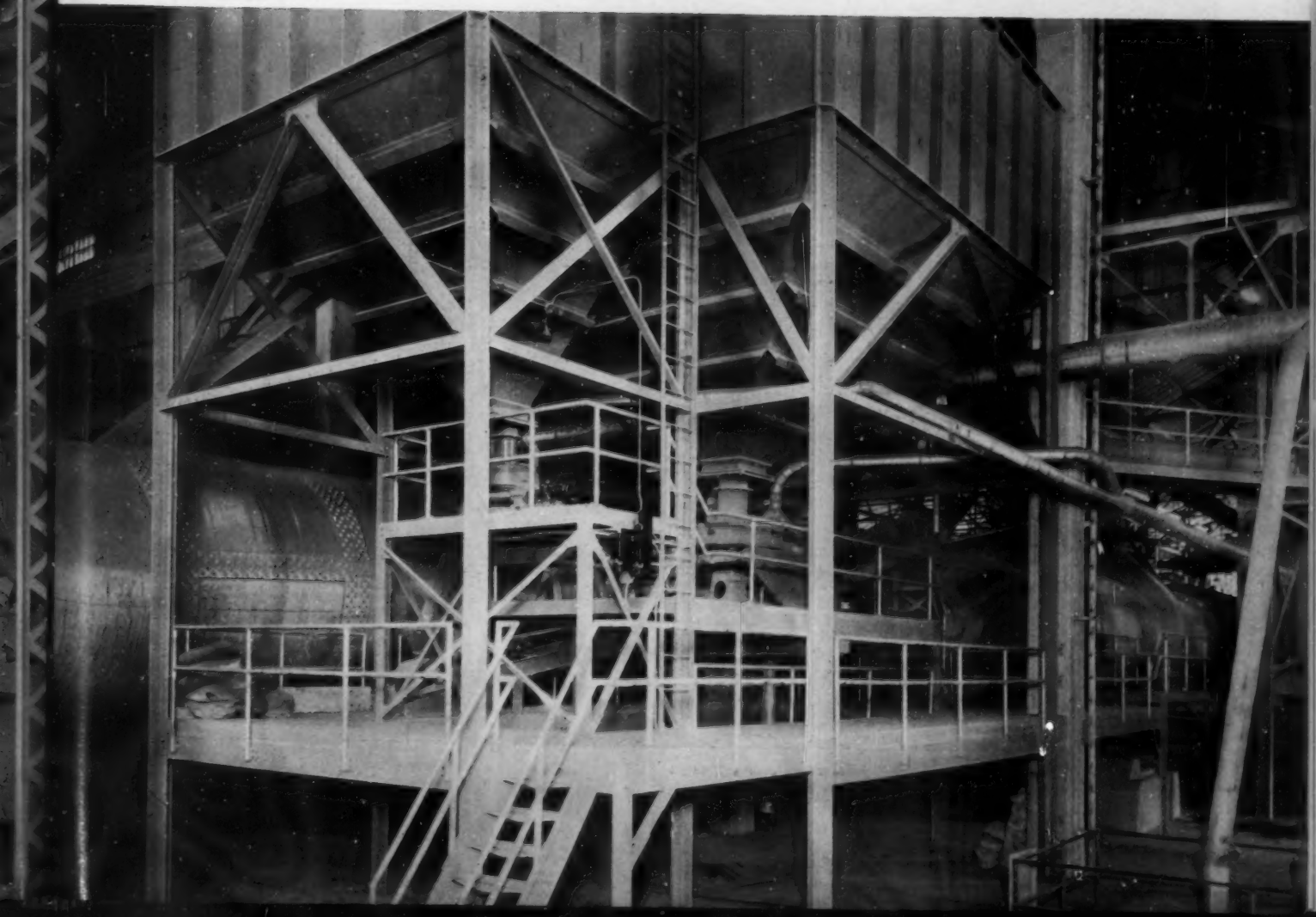
The Manitowoc Engineering Works has recently made, or has in the progress of manufacture, three new installations of the Vanderwerp recuperator—eight units in all, on cement kilns.

Another cement plant improvement very extensively made in 1936 was air separator installation on many existing compartment and tube mills. The Sturtevant Mill Co. has led in these although other manufacturers have also shared in this development.

Better grinding practice, more installations to use hitherto waste heat and direct firing of kilns by unit coal dryers and pulverizers cover most of the cement mill improvements made in 1936.







PRIZE-WINNING "HINTS AND HELPS"

Speeding Up a Revolving Screen

By C. O. GRANGER, Superintendent, Chas. H. Young Co., St. Paul, Minn.

IN ORDER to eliminate the overloading of the inside sizing screen of a revolving screen, the first 12 in. of sizing screen was cut away, allowing the finished product plus some sand to pass directly to the sand jacket.

To take the load off the sand jacket of the revolving screen, a small vibrator with a sand screen on the lower deck screens out about 50% of the sand, which passes directly to the sand bin.

By lessening the load of the inside screen and sand jacket capacity was increased 30 to 50% on a road oil job.

PRIZES AWARDED

FIRST ($50): To C. O. Granger, St. Paul, Minn., because his article apparently shows an ingenious way to solve a frequent problem in the aggregates industry.

SECOND ($40): To Ivor Ramm (a nom de plume), Southard, Okla., for describing the solution of a unique blasting problem.

THIRD ($30): To A. B. Edson, Cheddar, Somerset, England, for the solution of a lime-plant problem at the Callow Rock Lime Co., Ltd., operation.

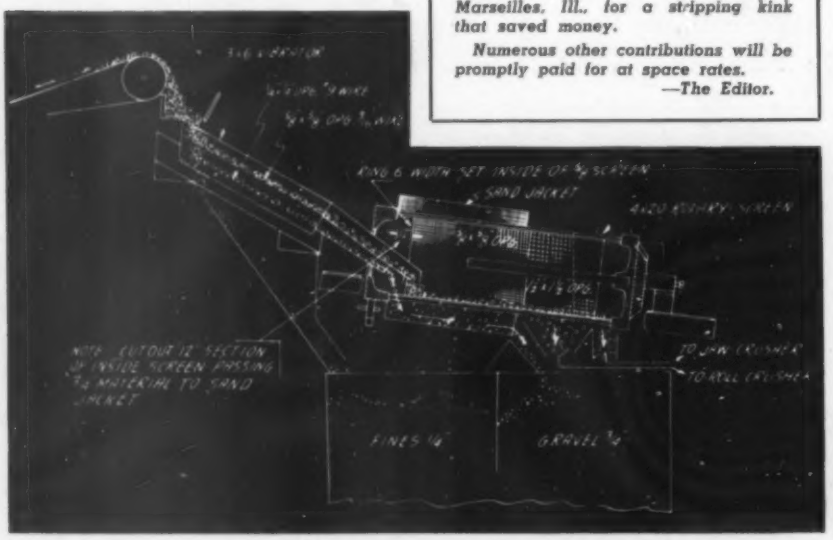
FOURTH ($20): To Procolo Pianetti, Paris, France, for his solution of a compressed-air problem.

FIFTH ($15): To Charles Clowe, Oxford, Kan., for rearranging a simple gravity screening operation to recover saleable gravel.

SIXTH ($10): To John H. Spicer, Marseilles, Ill., for a stripping kink that saved money.

Numerous other contributions will be promptly paid for at space rates.

—The Editor.



This scheme increased screening capacity 30 to 50%

Quarrying Under a High-Pressure Gas Line

By IVOR RAMM, Mining Engineer, Southard, Okla.

A HIGH-PRESSURE gas pipe-line lying in the way of stripping and quarrying operations is not a pleasant problem to handle with efficiency and economy, but we operators of a specialty gypsum quarry in western Oklahoma managed to accomplish the trick after a due amount of worry.

The quarry face, stripped and clean, was retreating around a hill. Blocking the path lay an important gas line which, at 300 lb. per sq. in. pressure, supplied our plant and two towns with natural gas. The pipe rested on several hundred cubic yards of natural shale overburden which the dragline had been unable to move. Beyond it was a stripped portion of the pit. To make matters more difficult, at its low end the gas line was a scant foot above the top of the ledge (about 15 ft. above at the other side).

It did not appear reasonable to move the pipe-line because of the expense, topographic difficulties and the possibility of interrupting service. Somehow the gas line had to be supported in place, the overburden removed from beneath the pipe, the top of the rock



Quarrying under a high pressure natural gas main



Never even wobbled the gas main!

cleaned, and the face drilled and shot and worked directly under the pipe. The job had to be done economically so as not to raise unduly either the stripping or quarrying costs of a small-scale operation.

The objectives were attained.

Stripping

The gas company took care of the pipe-line. We gave them some of our old dragline cable and they welded two sturdy "A"-frames from used pipe. They attached the cable firmly to the pipe, passed it over the "A"-frames, which were set up on each side of the pit, and anchored it in concrete piers.

However, the piece of overburden was still there and the pipe was resting on it, ready to swing free on the cable when the shale was removed from beneath it. The cost of handling that overburden by hand or with team and fresno was too high. The obvious answer was the dragline—but how?

We moved the dragline (a one-yard crawler with a 70-ft. boom) into the job, hung its boom low over the pipe-line, disconnected the bucket from the drag drum, dug away a little dirt directly under the pipe by hand, pulled the drag cable under the pipe and over the shale, and re-connected it to the drum. Then we hauled the overburden from beneath the pipe as miners would use a scraper in a stope. Some very light shooting in the toes loosened the shale sufficiently for digging. The simple scheme worked fine, after a few experimental bucketfuls.

When we had dragged all the dirt free, we disconnected the drag cable again and resumed the normal set-up. Where the pipe was so low that the bucket would not pass safely between the pipe and the top of the rock, we handled the shale with pick and shovel, but this yardage was negligible. In a few hours the machine swung the loose dirt to the spoil piles on the outcrop side. A little scraping with a team of mules and a fresno made the top of the pit spick-and-span.

Blasting

There we were, with the pipe neatly suspended and the pit completely stripped. The face retreated invitingly—and we were confronted with the necessity of drilling and shooting directly under or behind the pipe-line, without damaging it.

We planned the first shot carefully, spacing our holes evenly across the pit and taking an ample bite. We loaded them with all the experience the veteran foreman and powderman could muster in this rock. Our idea was to skid the face out almost in a solid chunk to minimize any shattering action. We considered blasting mats or other protective devices to be inadequate for this particular job. We used sticks of bulky ammonia "extra-type" dynamite, sensitized with nitro-starch, and No. 6 electric blasting caps connected in series to a pushdown firing machine of 50-cap capacity.

We had two gas company men on hand, their automobile headed down the road for the nearest valve, when we pulled the shot. But nothing happened. The face skidded out in a number of big slabs and the gas-line barely wobbled. We blockholed the big ones, running our holes deep near the floor and loading lightly with 1x4-in. bulky "extra" sticks and with cap and fuse, followed by solid gypsum dust tamping to the collar of the hole. The shot immediately under the pipe-line did not seem as dangerous to us as the next one. It again was loaded carefully and the shot passed without incident, although there was a little more fragmentation and the pipe-line did give a jerk or two when the explosion occurred. The pictures show this second shot as it was being pulled, and then just as the smoke was drifting away.

After we had quarried the pit, the gas company came in with two more stout "A"-frames, which they set on the quarry floor to support the pipe more adequately.

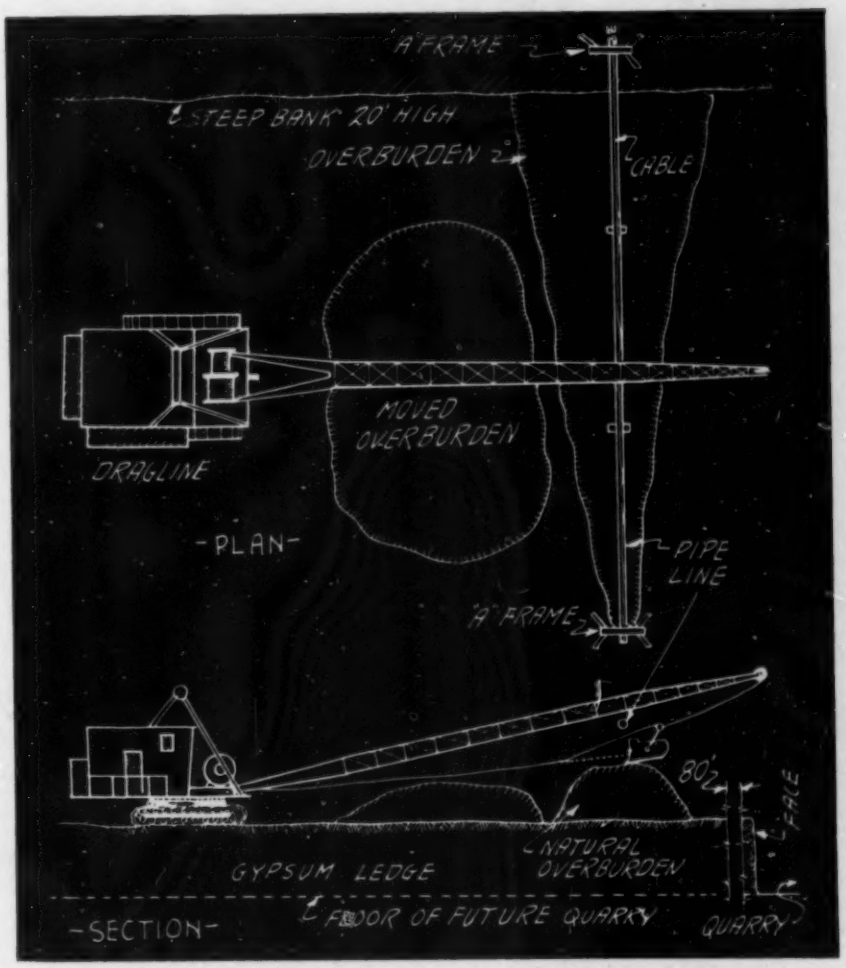
The entire incident was lost in our monthly cost sheets.

Widening Bridge to Serve More Kilns

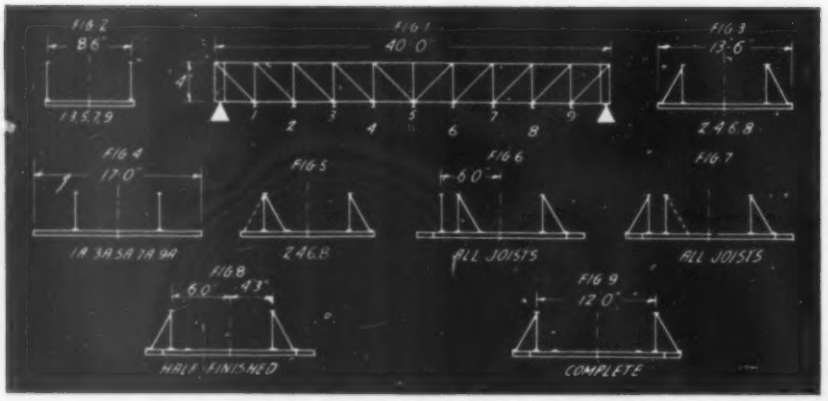
By A. B. EDSON,
Cheddar, Somerset, England

IT MUST be a very common occurrence on works that have sprung from small beginnings for some part of the original plant to be found unsuitable for the altered conditions which exist when extensions are built.

In the case described, a steel bridge, originally intended to carry a single 24-in. gauge track for supplying stone to



Dragline working "over and under" the gas main removes overburden under it



Step by step progress in widening lime-kiln bridge

one lime kiln proved to be too narrow for a return line system to be worked conveniently when a row of kilns was added later, and it had to be widened without interfering with car movements for more than an hour or two at a time.

The bridge was of the simple lattice-girder type, built up of angles and flat connection plates, 40-ft. span, in 10 panels, and 8 ft. 6 in. nominal width, having a wooden deck (not shown in the sketches) carried on cross beams or joists of H-section secured to the underside of the main frames (Figs. 1 and 2). Certain of these joists, Nos. 2, 4, 6, and 8, were extended 2 ft. 6 in. outwards at each side to carry angle struts to stiffen the top members of the side frames (Fig. 3).

The bridge had to be widened to 12 ft. nominal width, and side struts fitted as before for stability. The widening operation was carried out in nine moves as follows:

(1) The short joists, Nos. 1, 3, 5, 7, and 9 were removed one at a time and replaced by new ones 17 ft. long, Nos. 1A, 3A, 5A, 7A, and 9A (Fig. 4), the work being done from a suspended scaffold. The foundations for the ends of the bridge were extended, at the same time, the necessary distance sideways.

(2) The track was restored to single line for the length of the bridge, the working track being moved as far as possible to the right-hand side, after which the side struts on the left-hand side were reversed to face inwards on the beams which carried them (Fig. 5).

(3) A complete new side frame was erected on the extended foundations, 6 ft. from the center line on the left-hand side and secured to the cross beams, the diagonal bracings in each panel being fitted last by drilling in place (Fig. 6).

(4) The side struts previously moved on joists Nos. 2, 4, 6, and 8, together with one new one, were fitted to the new 17-ft. joists, Nos. 1A, 3A, 5A, 7A, and 9A in the normal outside position (Fig. 7).

(5) The old left-hand side frame was removed after cutting through the connection plates just above the bottom member (Fig. 8). The bottom member carried certain wind bracing which had to be left in position, otherwise the side frame could have been removed completely.

(6) The deck was made good over the extension and the track moved over to the left-hand side, after which the struts on the right-hand side were turned inwards on their joists.

(7) A new bottom member with connection plates was built for the dismantled side frame, and the rebuilt frame was erected in the appropriate position on the right-hand side, the diagonal bracings again being fitted last.

(8) The struts on the right-hand side, together with one new one, were fitted in the normal outside position on the 17-ft. joists.

(9) The old side frame on the right-hand side was removed except for the bottom boom, leaving the bridge of the requisite width of 12 ft. for double-track operation.

The alteration was carried out without accident and with very little interference with car traffic, and the result was well worth the cost of the new steelwork and the labor involved in the work.

Taking Vibration Out of Air Line

By PROCOLO PIANETTI,
Paris, France

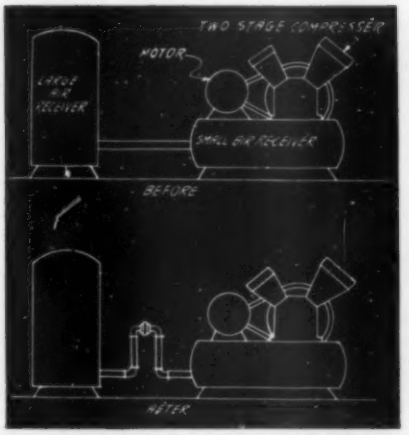
AT OUR PLANT was installed a receiver-mounted air compressor driven by a V-belt (Sketch No. 1).

The small air receiver of this unit was rigidly connected by an iron pipe to a much larger receiver.

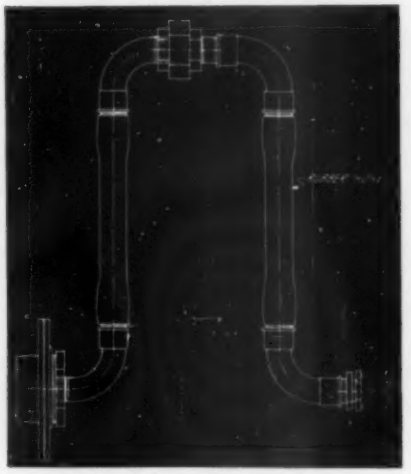
The vibration transmitted by the air compressor to the large receiver and the air line of the plant was very annoying, and it was absolutely necessary to stop it.

I had no time to change the installation for the reason that the plant was rushed with orders.

With two pieces of rubber hose and some standard coupling I made a flexible joint as shown in Sketch No. 2. The result was immediate. The vibration stopped completely, and everything is running O.K.



Before and after air compressor connection



Detail of hose connection

Recovering and Selling Waste Gravel

By CHAS. CLOWE,
Oxford, Kan.

THE SKETCH herewith shows a scheme I worked out to stockpile gravel when making engine or plaster sand. Our company had always used screen cloth on the grizzly when making these types of sand, letting oversize go back into the river. Our grizzley screen was 1½-in. mesh; and, to take

out gravel, we would just lay ¼-in. mesh, or whatever size was required, right over the grizzley screen.

Our screens for dewatering the dredge-pump discharge and taking out excess fines at the lower end of the spread table were in frames 8 feet. long by 4 ft. wide, giving a screening surface of 16 ft. by 4 ft. In making plaster, engine sand or fine aggregate, these screens were covered with sheet metal.

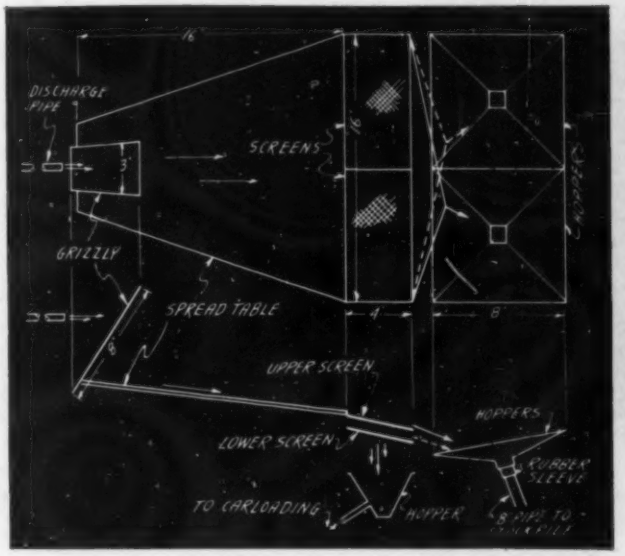
Originally, the top edge of these screens came flush to top of spread table. Lowering the screen 4½ in. at top and at bottom, with the slope remaining the same, I cut eight 2x4's and set them in place on top of the screen crossways. Then I cut a strip of ¼-in. screen cloth 16 ft. long by 4 ft. wide and laid it over the 2x4's, tacking it in a few places to the edge of spread table.

By bringing the ¼-in. screen on top of the spread table to tack it left a 4-in. vacant place at the bottom of the screen. I laid a 1-in. board 16 ft. by 6 in. across the 2x4's and nailed it to them, bringing the ¼-in. screen on top of it and tacking in a few places. This left a space of 3 to 4 in. between the upper and lower screen decks.

The fine aggregate falls into a hopper and all oversize falls off the top screen into other hoppers and through 8-in. pipes runs to stockpile. These gravel hoppers were 1 ft. deep, 8 ft. square at the top and 1 ft. square at lower end, and lined with sheet metal and set at a very sharp slope. An 8-in. hole was cut in the bottom of each and an 8-in. pipe flange was bolted over each hole. Screwing 1 ft. of 8-in. pipe into each flange, I then put a 2-ft. rubber dredging coupling over each 8-in. pipe and clamped it tight. Then I clamped a pipe joint into each sleeve. I built a support for the pipes from the hoppers, with supports within a foot of the rubber dredging sleeve. Then I had to build a jack to support the lower end of the pipe. The lower end of the pipe, when in place, was 12 ft. above the ground. I could swing this pipe nearly in a half-circle by bending the rubber sleeves, and still run material through. I swung both pipes to the far end of the jack and put in a partition wall to keep the gravel separate from other stockpile material. In four months I had a stockpile of clean gravel of 600 cu. yd.

We sold it at 85c per cu. yd. and built up such a demand for it that now it is kept pretty well cleaned up all the time. The material is used on driveways, mudholes and roads. Before our present system, it was all wasted.

When we are through making fine aggregate and having other material to load, we take off the top screen and leave out the 2x4's and proceed. Two men can make this change in two or three minutes. The 2x4's were spaced across the screen 2 ft. apart.





ABOVE—Saving time in stripping gravel

LEFT—Catching for profit hitherto wasted gravel

Expediting Gravel Stripping

By JOHN H. SPICER, Superintendent, Spicer Gravel Co., Marseilles, Ill.

STEPPING UP production with the equipment on hand is the best way of making or saving money.

For stripping we have a ¾-yd. gasoline-powered crane used as a dragline and two trucks, one 4-yd. and one 5-yd., water level. The bank is about 12 ft. high and we had been using the conventional method of loading the trucks on the same level as the crane.

This meant about 25 ft. of hoist for every bucketful, and a 90-deg. swing. In spite of the greatest of care there was some spill. Holes and bumps were left after cleaning, and this made rough going for the trucks and slowed them considerably.

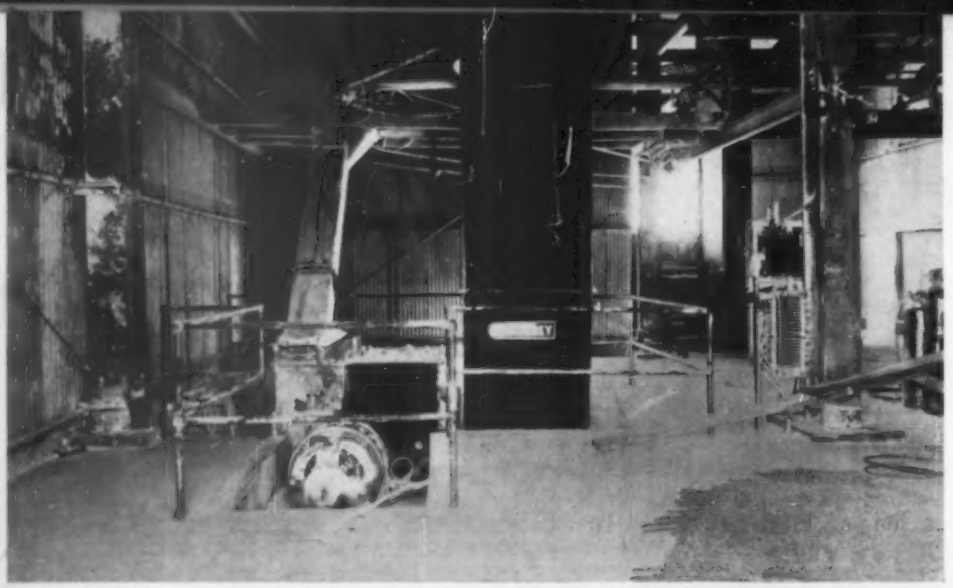
Dumping the spoil over a 50-ft. bank made a soft fill to back out on. An average of one truck stuck every two hours, bad enough that it had to be pulled out, and caused plenty of headaches. With this system, ten 5-yd. loads an hour was good going.

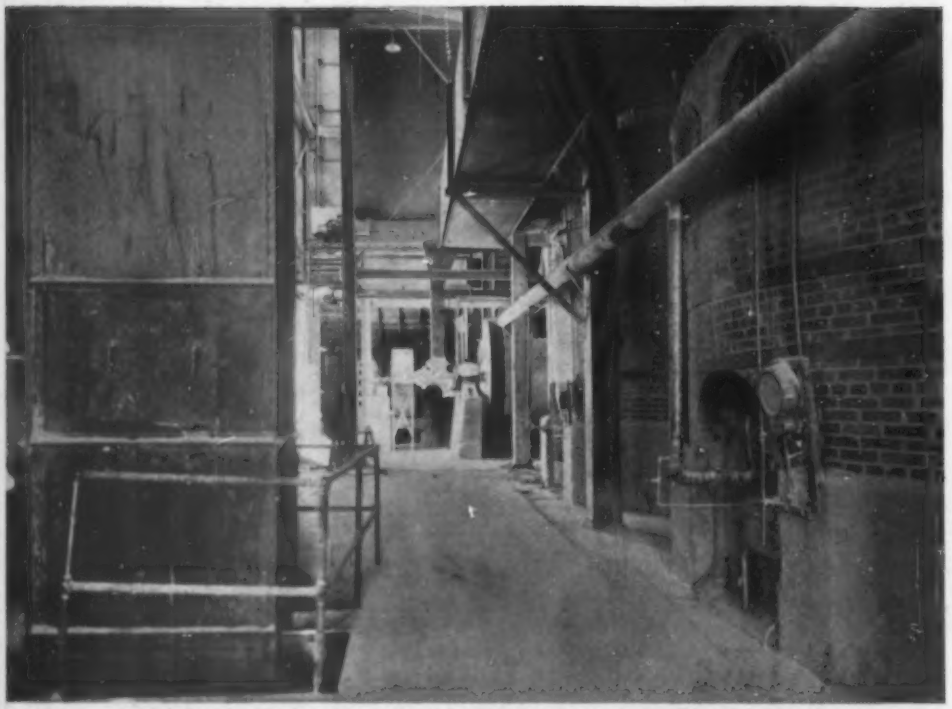
With the new arrangement the trucks stand on the lower level. The dirt is picked up right along side of the truck, so that the swing amounts to nothing. By the time the bucket is loaded it is within 6 ft. of high enough to dump. The trucks are spotted first on one side and then the other. The spill is taken care of in the natural course of loading the bucket and it is much easier to get a smooth job. The crane operator objected at first; he said that it was impossible to load that far below the machine. But after a few passes (one on the cab and a couple on the ground behind the truck) he began hitting and before long things really began to move.

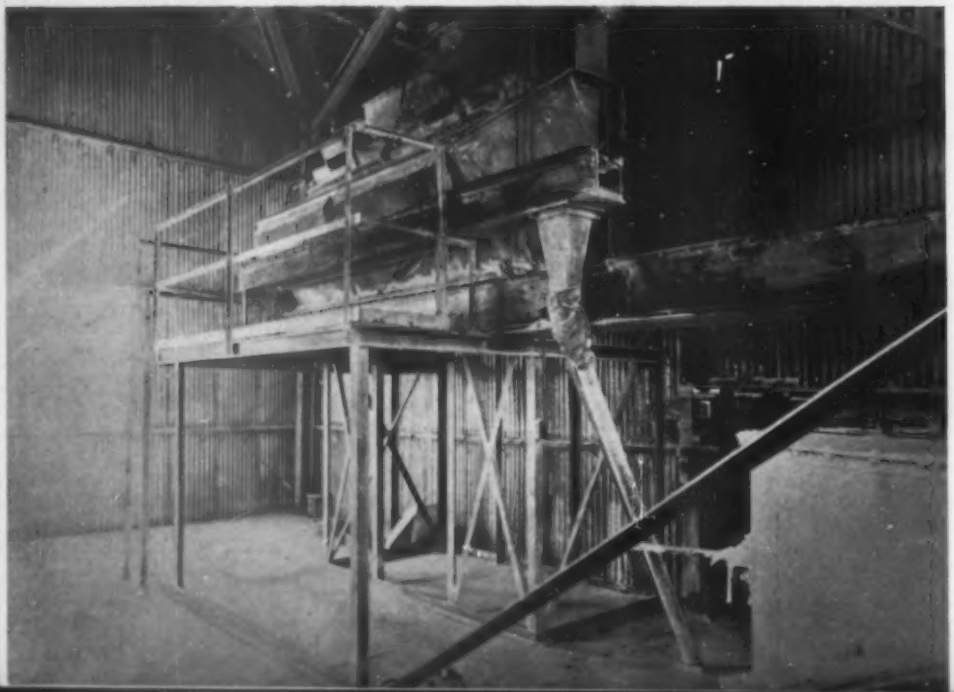
The end gates on the trucks are let down, on chains, straight out from the bottom of the boxes. They will not take as big a load but can travel much faster. The end gates, about 30 in. long, allow the trucks to stay that much farther away from the edge and no stones lodge in them.

With one man on the dump we did not have a truck stuck in three weeks.

With the same equipment, we averaged 30 loads an hour instead of 10. Better than 40 was made a few times. Allowing for the smaller load, we still were doing almost 250% better than before, and with far fewer headaches.







National Gypsum Company

THE Rotan, Texas, plant of the National Gypsum Co., in keeping with the company's expansion and modernization program, has undergone radical changes in 1936, both in methods of manufacture and products made.

Immediately after this plant was acquired late in 1935, remodeling began for the manufacture of "Gold Bond," National's patented gypsum board in place of the heavier, less uniform "Gypselite" made from gypsite. A 300-acre tract of land, underlaid with high grade gypsum rock, was purchased outright and a new all-steel crushing plant 54x48 ft. in plan was constructed.

Rock is dumped direct from Chevrolet motor trucks to a 60-in., Pennsylvania single-roll primary crusher, driven by a 40-hp. G.-E. motor through a Texrope drive. Two-inch minus product from this crusher is raised by a 60-ft. centers Jeffrey bucket elevator to a 200-ton Buffalo Structural Steel Co. bin. Rock is drawn from this bin by three eccentric rock feeders to a 30-ft. belt conveyor discharging to the secondary crusher. This is a hammer mill crusher, manufactured by the Pennsylvania Crusher Co. and driven through a direct drive by a 75-hp. Westinghouse motor.

The crushing rate of the hammer mill is 10 tons per hour, with 60% of the product passing the 100 screen. The crusher product is raised direct to two 4x5-ft. Tyler Hum-mer screens by a 76-ft. centers Jeffrey elevator. Tailings are returned to the hammer mill and the fines (70 to 75% through the 100-mesh) are carried by a Link-Belt screw to an 8-ft. Sturtevant separator.

The final separator product, 90 to 92% passing the 100-mesh screen, is stored in two steel bins for plaster, each of 200-ton capacity. Separator rejects are passed through a Pulverizing Machinery Co. "Micro-Pulverizer" and return to the Hum-mers by way of the same Jeffrey 76-ft. centers elevator.

The fine product in the plaster bins

TOP: Interior of new crushing plant of National Gypsum Co., Rotan, Texas. The horizontal conveyor feeds the hammer mill on left. The secondary crusher product is elevated to the screens above. CENTER: Calcining kettles to the right, and feed end of gypsite tube mill in the background. BELOW: The secondary crusher product is passed over these vibrating screens. The separator at right receives the throughs, and tailings return to the hammer mill on the floor below.

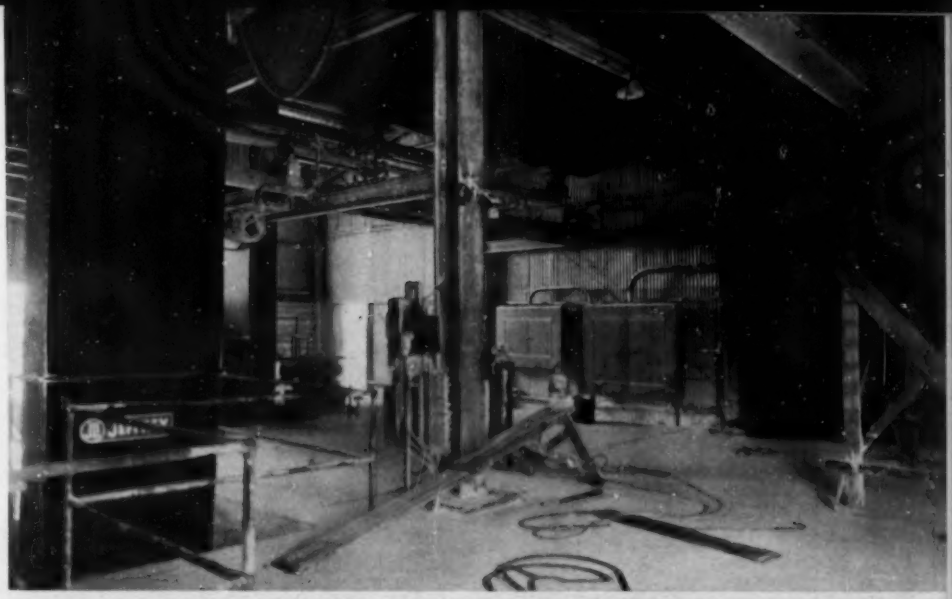
CONSTANTLY FORGES AHEAD

can either be sold as agricultural gypsum or be drawn for calcination. A drag chain beneath the bin carries the land plaster to a bucket elevator feeding a Jeffrey screw conveyor, which in turn discharges to the No. 4 Ehrsam kettle. The plaster is calcined in 15-ton batches and then elevated to a 300-ton steel storage bin in the board plant.

The temperature of the calcined gypsum averages 200 deg. F., from which it is cooled 50 to 60 deg. in passing over a Coe cooler pan conveyor to the feed end of the soak belt. The flow of gypsum from the large storage bin to the belt is automatically regulated by Ripley Bin-dicators. A new paper beater was installed to mix the paper pulp with water. The mixture is kept in continuous motion, to prevent segregation, in a pulp storage chest adjacent to the feed end of the soak belt. At the far end of the soak belt, the gypsum and pulp are intimately incorporated by a system of agitators, rotating on vertical shafts. Foam from the spindle mixers is dropped to the paper in front of the forming rolls.

The transfer of the board to the Coe dryer is automatically controlled by an electric eye. The dryer is the continuous rotary type, equipped with 6 decks. A 50-ft. extension has been added to its discharge end, making a total length of 230 ft., a necessary addition for the manufacture of a lighter board. The improved plant has a capacity of 150,000 ft. of board in 24 hours.

Micro-plastic plaster is a new product recently added. A 22x6-ft. Allis-Chalmers rotary mill was installed, driven by a 300-hp. G.-E. motor through a Link-Belt gear reducer, to reduce gypsite to a fineness of 85 to 90% through the 100-mesh screen. After calcination in the kettles, gypsite is stored in a 300-ton bin above the mill, from which it passes through the mill.

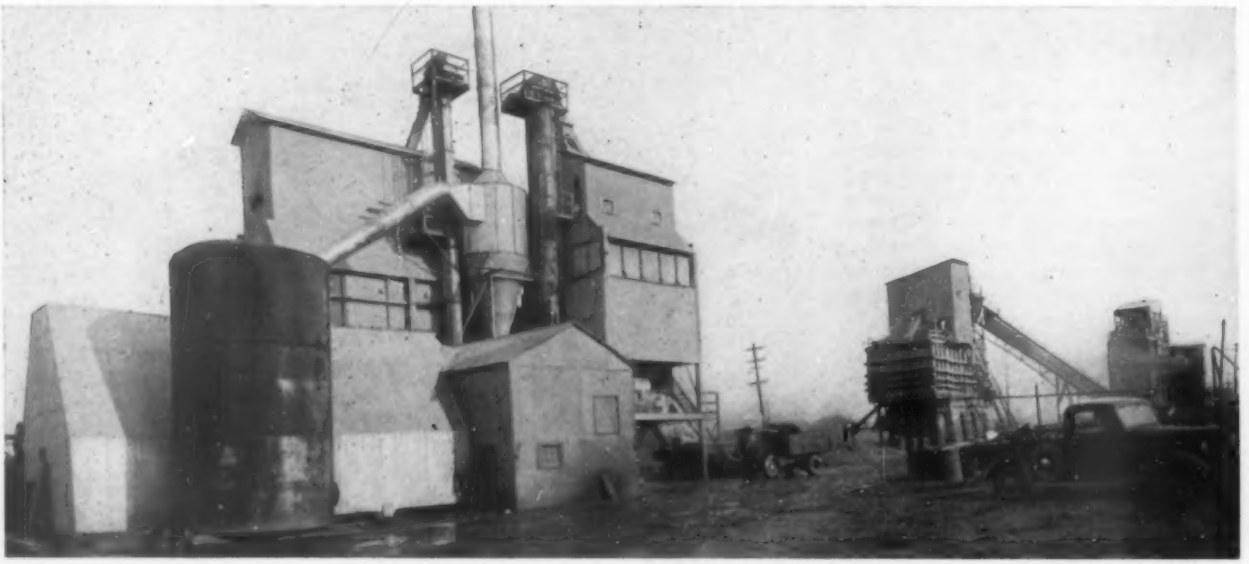




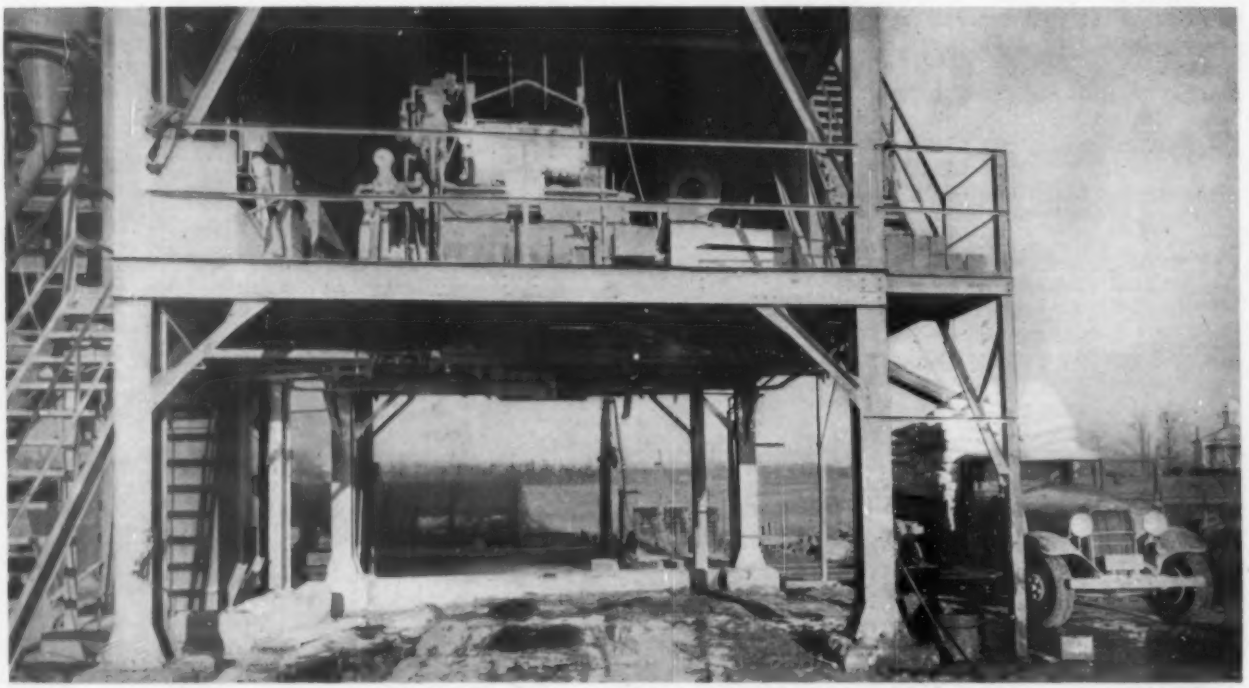


TOP: Construction view of new Texas crushing plant. Note elliptical design of steel bins above. Preliminary crushed gypsum is stored in bin above the horizontal belt conveyor, final sized product in the other. The elevator raises the secondary crusher product to screens above. CENTER: Vertical shaft agitators for incorporation of stone and pulp. BELOW: A 50-ft. extension was added to the discharge end of the dryer. Rolls on left carry board to far side of dryer, where transfer is made by electric eye.

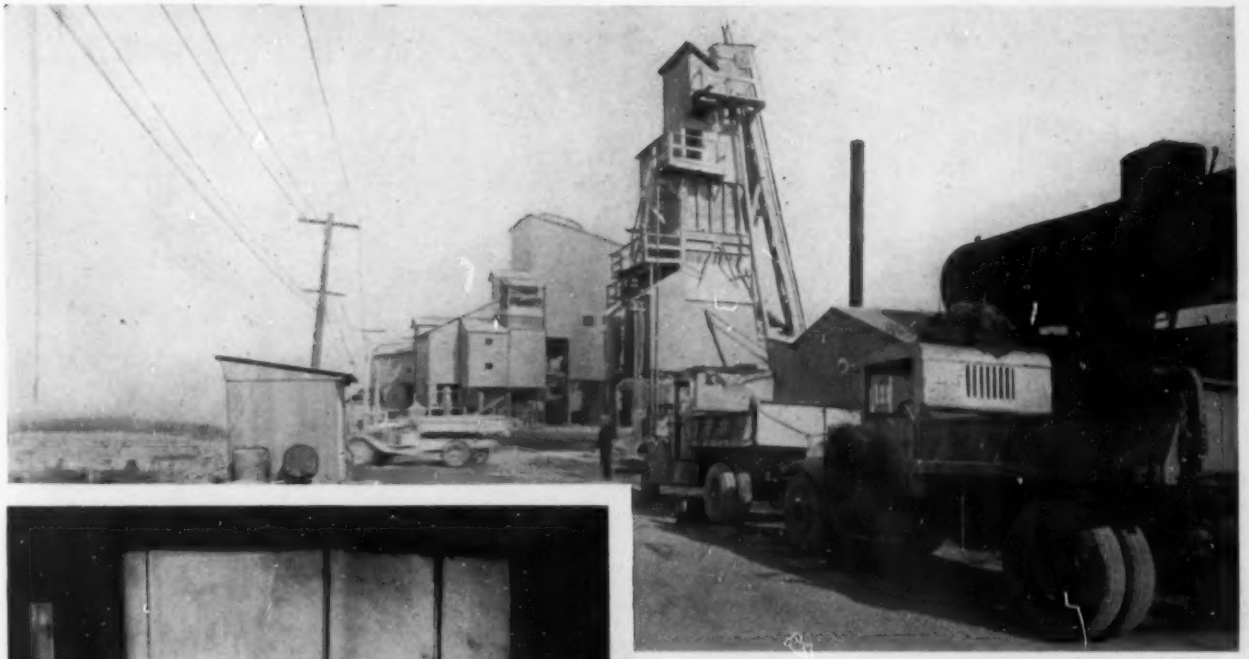
ADVANCES IN CRUSHED STONE MERCHANDISING

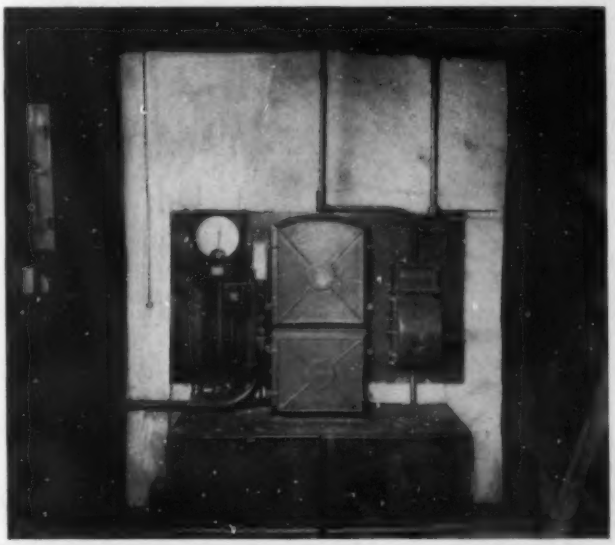


Amiesite—cold mix, asphalt-coated stone—is really "going places" in New York state, judging from activities of the General Crushed Stone Co., Easton, Penn. The company's plant at Geneva, N. Y., pictured here, built originally in 1934, was enlarged and improved in 1936, to better meet demands. A second 2-ton pug mixer was added and 540 tons additional storage (on the left) to permit shipments upwards of 800 tons daily when pressed. Dried stone is raised by a 70-ft. centers Link-Belt bucket elevator and passed to the new bins over a 3-deck, 3x10-ft. Niagara vibrating screen. Belt conveyors and a 68-ft. centers Link-Belt elevator take stone from these new bins and transfer to the bins above the mixers, ready for use. The new Norblo dust collector in the center removes dust from the dryer as well as from the elevators, the screen and the mixing platform and furnishes draft for the dryer, a Buffalo mill exhauster furnishing the air.

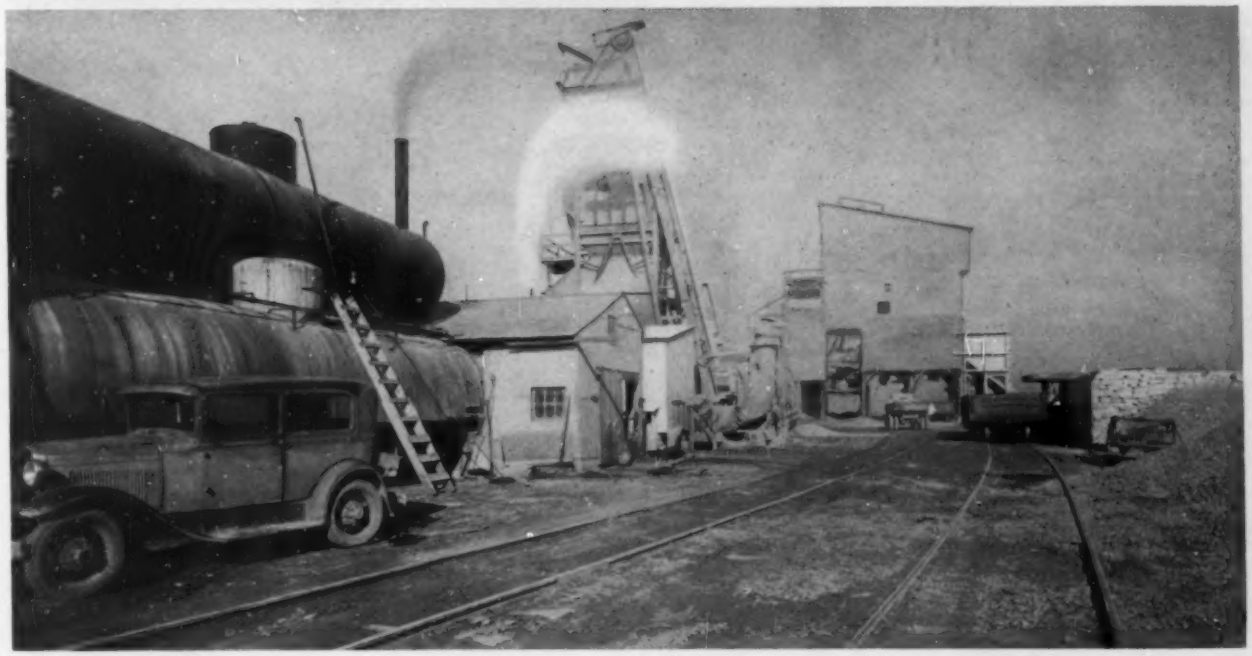


Mixing platform at Geneva, N. Y., plant of General Crushed Stone Co.—mixtures are as accurately proportioned as are modern ready-mixed cement concretes.

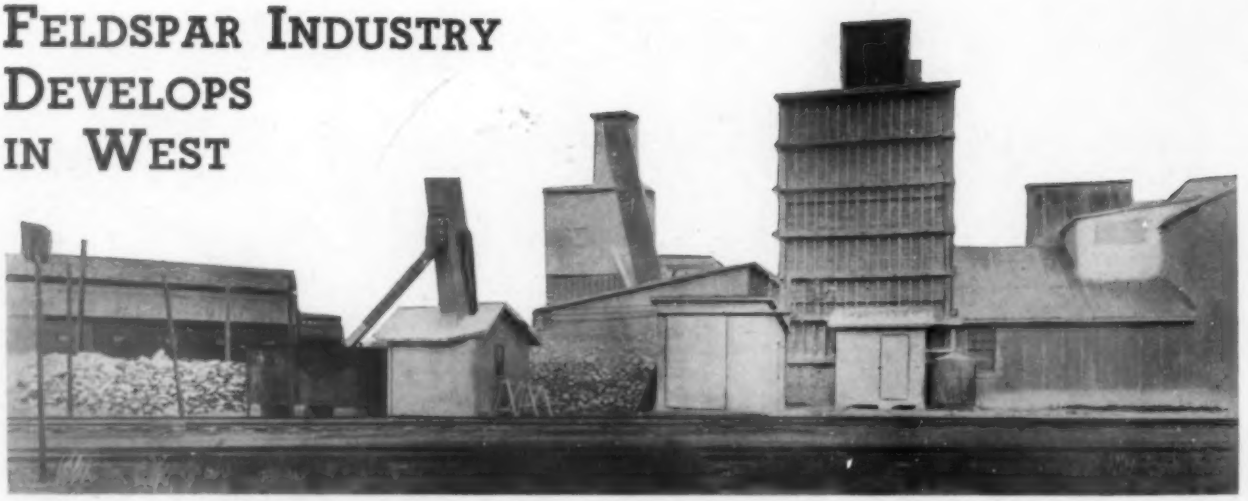




The electric bitumen heater to the left has been recently installed at the Auburn, N. Y., plant of the General Crushed Stone Co., Easton, Penn., pictured above and below, and at the company's Rock Hill, Penn., plant. These "Clarmac" heaters, developed in England and manufactured by the Easton Car and Construction Co., Easton, Penn., are said to be the first electric heater installations installed in amiesite plants in the United States. The heater is 6x7x10-ft. in size with a 3000-gal. storage tank and is well insulated. Bitumen is heated by thermal units near the bottom of the heater. There are 15 such units in these particular heaters, but any number can be used in groups of three, to suit requirements. At Rock Hill, a recording pyrometer automatically regulates the temperatures. Two mercoid switches are set at 275 deg. F. and 285 deg. F., the thermal units being shut off and turned on to maintain a bitumen temperature between these limits. Observations at these plants show a remarkably constant bitumen temperature at very low cost. Further details will be discussed in a later issue of Rock Products.



Feldspar Industry Develops in West



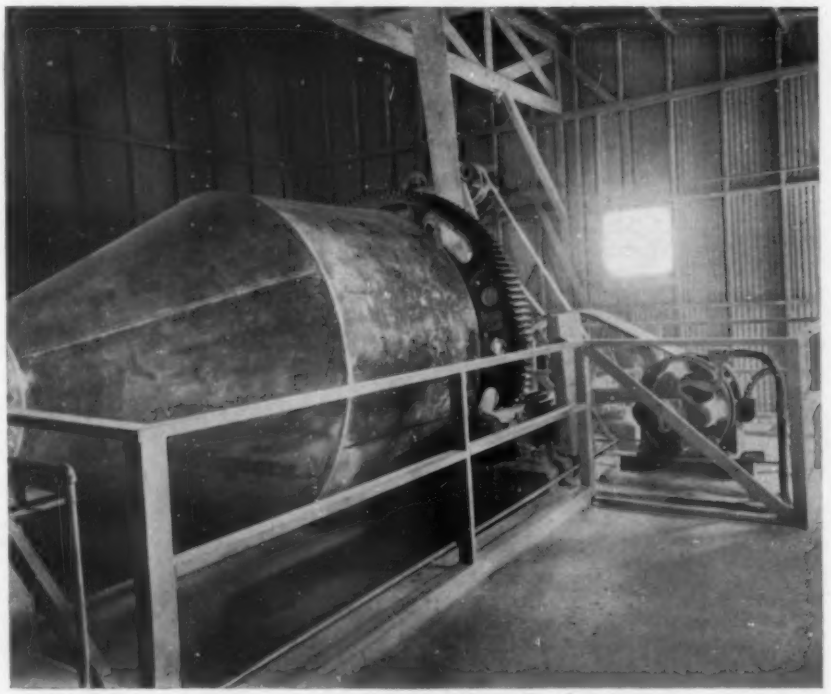
Western Feldspar Milling Co.'s plant: glass spar building in center

WESTERN FELDSPAR MILLING CO., Denver, Colo., has taken the first step in an expansion program, which will represent an outlay of $75,000 by June, 1937.

A new structural steel and galvanized iron addition was erected in June, 1936, for the grinding of 20-mesh (and under) feldspar for use by the glass-making industry. Equipment includes an 8x60-ft. Hardinge mill, driven by a 100-hp. Allis-Chalmers slip-ring motor through a Texrope drive, a Universal primary crusher, a Gates secondary crusher, a 3x8-ft. Simplicity single-deck vibrating screen and home-fabricated elevating and conveying equipment.

Rock as large as 10 in. by 12 in. in size is reduced to 1½ in. and under in the primary jaw crusher. The crushed feldspar passes directly to the secondary crusher, where it is further reduced to minus ⅜-in., before entering the Hardinge mill. This mill is lined with Jasper stone (quartz) and grinding is accomplished by blocks of the same stone. This $25,000 installation has raised the plant capacity to one hundred 50-ton cars of feldspar per month.

Within the next 9 months, $50,000 will be spent for equipment and machinery for the processing of soda spar for the pottery industries and mica for use in paints (200 mesh).



Feldspar is ground to 20-mesh fineness in this mill

Concrete Pavement Yardage

AWARDS of concrete pavement for November, 1936, were announced by the Portland Cement Association as follows:

Type of Construction	Sq.yd. awarded during Nov., 1936	Total sq. yd. for 1936 to date Nov. 28, 1936
Roads	2,550,301	36,607,457
Streets	1,188,801	14,566,437
Alleys	30,072	344,503
	3,769,174	51,518,397

Bentonite

PEREL AND LOWENSTEIN, Memphis, Tenn., are reported as planning to construct a bentonite processing plant at Aberdeen, Miss., work to start in January, 1937.

To Remodel

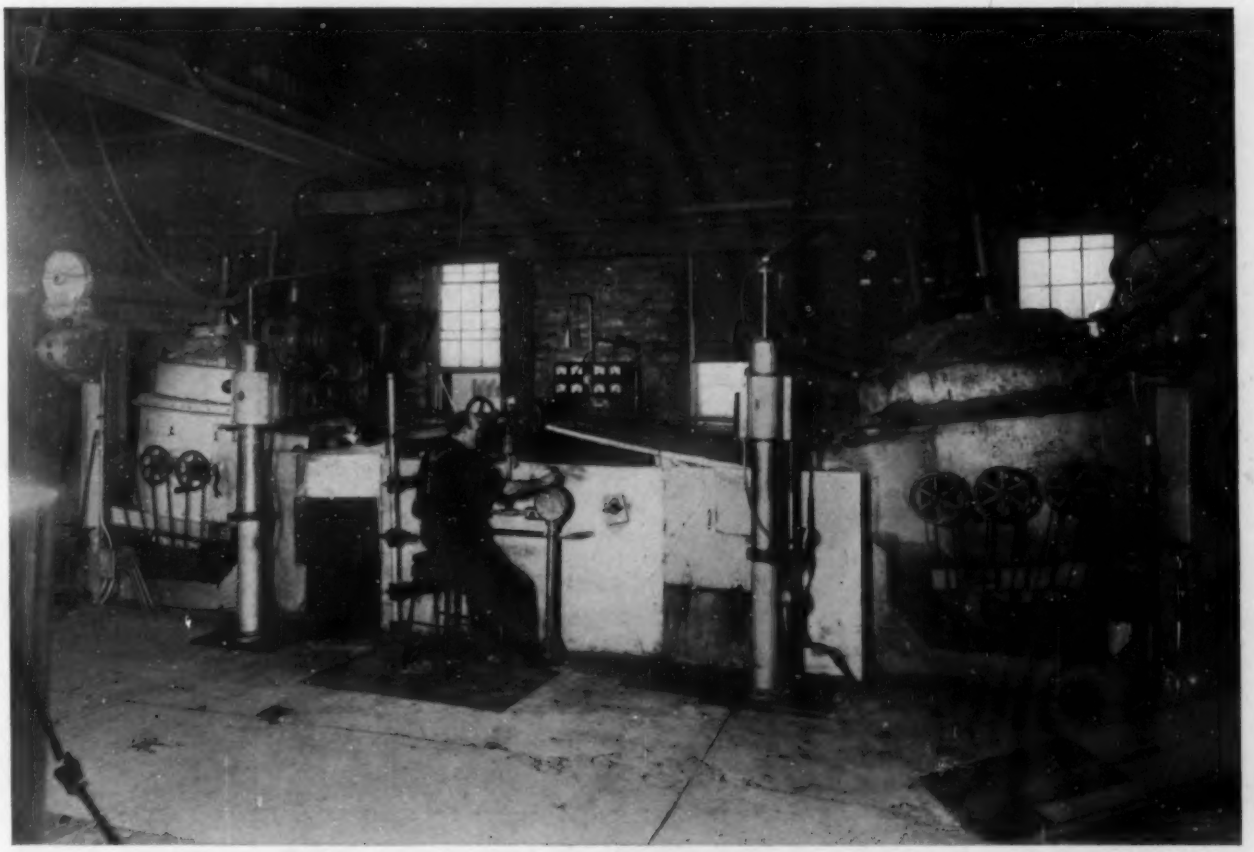
KELLEY ISLAND LIME AND TRANSPORT Co., Cleveland, Ohio, according to local reports, has practically closed its Gibsonburg, Ohio, plant while a rebuilding and remodeling project is under way. Additions will be built and more kilns added.

Wage Increase

UNIVERSAL ATLAS CEMENT Co., Chicago, Ill., along with other subsidiaries of the United States Steel Corp., has increased hourly wage rates approximately 10%.

Reopening Mica Mine

ALFRED SMITH, Johnson City, N. C., is reopening the old Hawk mine near Spruce Pine, N. C. Originally the mine was a shaft operation, but now a tunnel is being driven from the foot of the hill underneath the old workings. Drainage troubles are expected to be eliminated under the new method.



An exceptionally long-fibred, light-weight wool is being made by Spun Rock Wools, Ltd., Thorold, Ont., Canada, by resistance arc type electric furnaces. Melting rock by electric furnace and fiberizing it by mechanical means is believed to be an entirely different process from that in present use in the rock wool industry elsewhere. Three one-ton tilting furnaces are now in use at this plant. One man controls the operation of the two furnaces shown above, without leaving his station, from which he actually sees the fiberization process. Furnaces are tapped and charged practically continuously. When the furnaces are tilted, molten rock impinges on a high speed disc, averaging about 4000 r.p.m., and is thrown off tangentially to form long silk-like fibres. The furnaces can be tilted at will to control the width of the molten stream, and variations in disc speed influence the fibre length. Normal domestic rock wool as made by this process weighs only 3 lb. to the cubic foot. Output is about 2½ tons per day.

ROCK WOOL MADE IN ELECTRIC FURNACES AND SPUN

Electric furnace rock wool is collected in chambers 15 ft. square. Sturtevant fans pull the wool from the area surrounding the rotating discs and discharge the wool from the pipe above. The discharge impinges in the "tub" shown with considerable force, the wool rebounding and the heavier shot remaining in the container. Much shot is dislodged in passing through the fan.



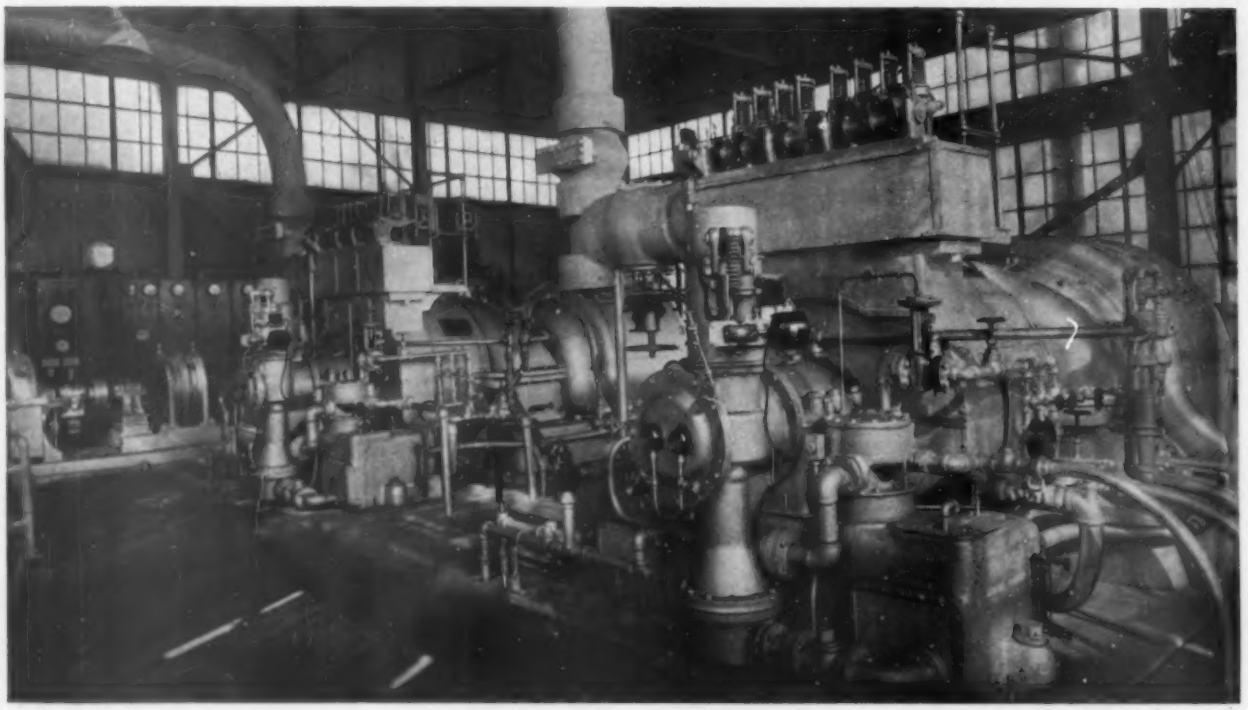
Rock wool is scooped up from the chamber, boxed up and stocked in this warehouse. The demand has been such that rarely, if ever, is much on hand. Four cubic feet of rock wool are generally packed in a bag. For extraordinarily high or low temperatures, a 6 lb. per cu ft. wool is sold. An unusually white wool was made and designated as "snow" for Christmas decorations.



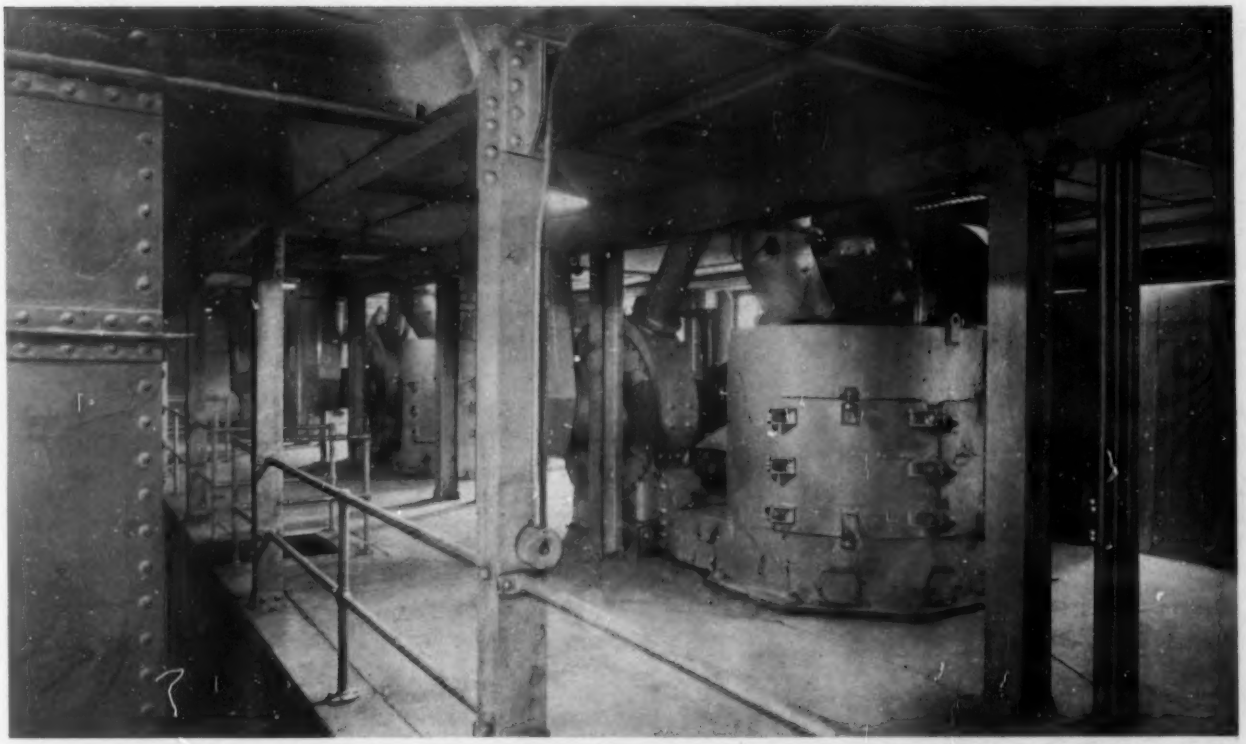
A MODERN CEMENT PLANT BECOMES MORE MODERN



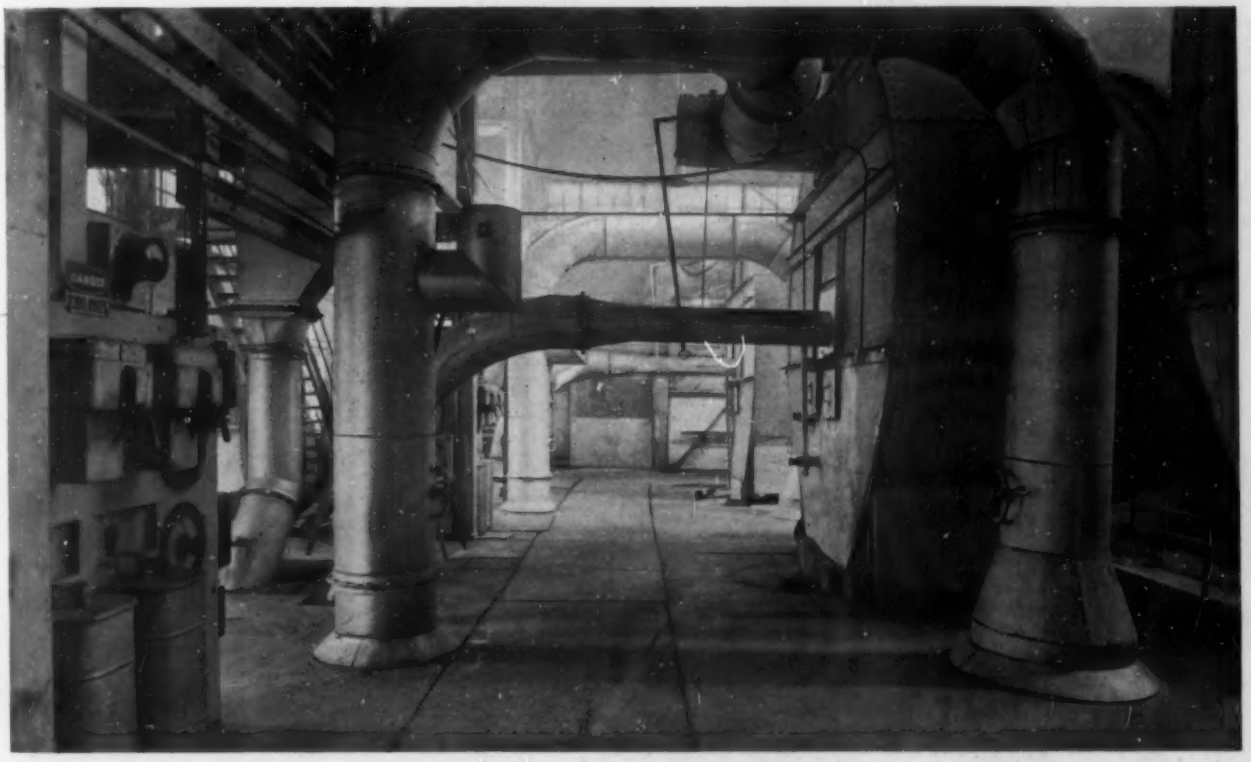
Peerless Cement Corp., Detroit, Mich., can now take care of peak plant loads without purchasing supplemental electric power, since the installation of these 3750-kv.a General Electric turbo-generator sets.



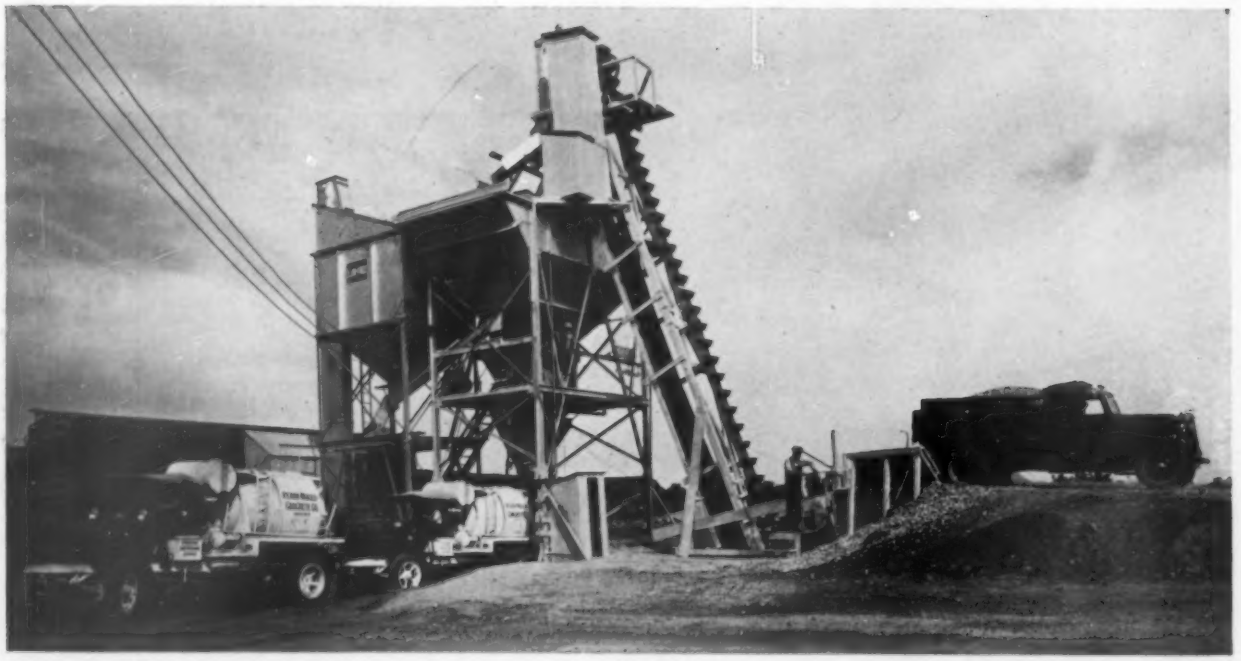
Curtis steam turbines under 200 p.s.i. steam pressure drive the type ATB generators, which are rated at 328 amp. at 6600 volts, under full load. These generating units displace two 2500-kv.a. turbo-generating sets.



Peerless Cement Corp., Detroit, Mich., has equipped each of its three 175-ft. kilns with a No. 144 Babcock & Wilcox direct-fired coal pulverizer, for a cleaner operation and fuel economy. A 150-hp. G.-E. motor drives each mill through a Gates V-belt drive, splitting the belt to drive the fan also



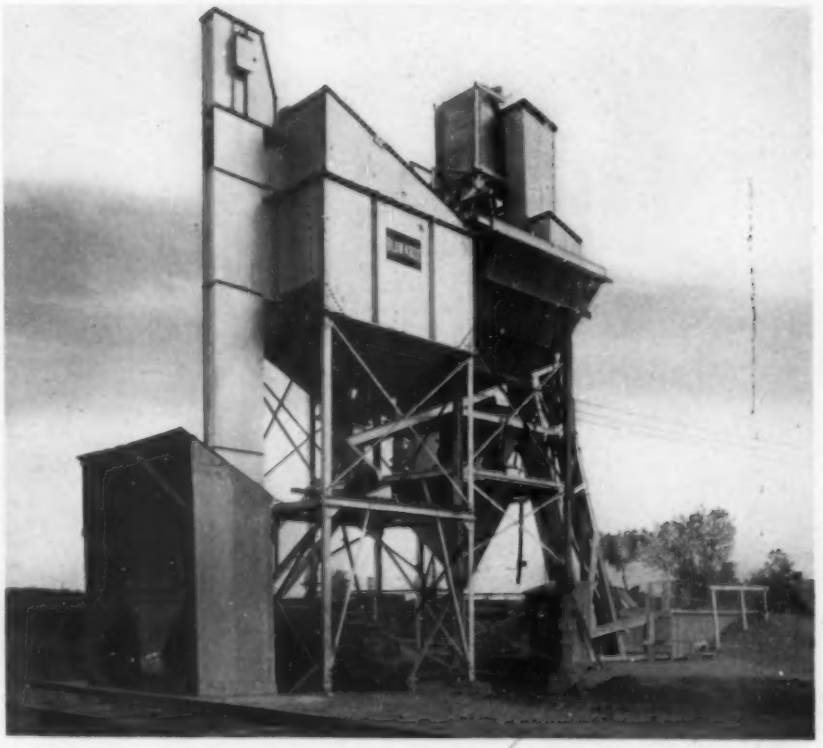
About 8000 cu. ft. of primary and secondary air pass through each mill per minute, of which 72% is secondary air and 28% preheated primary air. Primary air is blended from two sources. Above, it is taken from the kiln hood, while the vertical pipe on the right conducts heated air direct from the hot conveyor below.



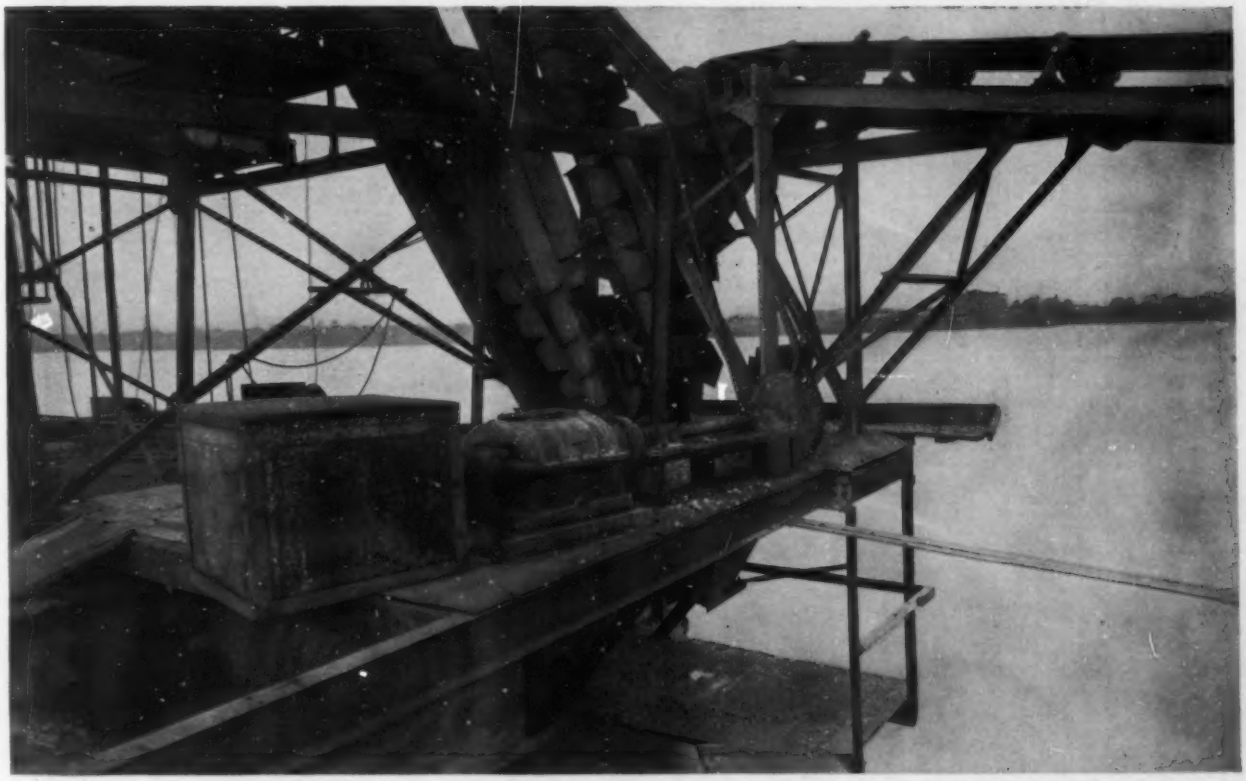


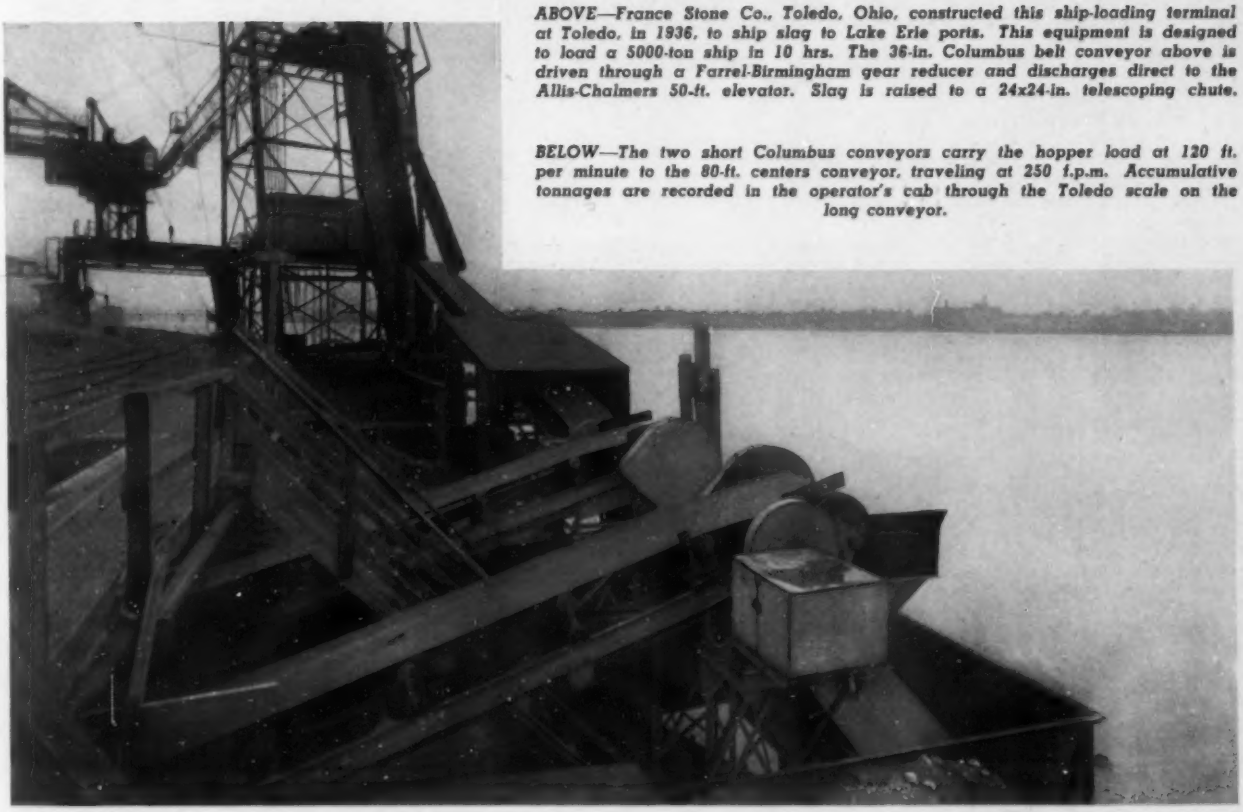
READY-MIX

ABOVE: Ready Mixed Concrete Co., Denver, Colo., began to operate this new Blaw-Knox Trukmixer loading plant in September, 1936. The truck is preparing to dump to the 25-yd. hopper, from which aggregates are elevated to the 110-ton, 3-compartment-in-line, aggregate bin. The elevator is operating on 54-ft. centers. On the left is the 300-bbl. bulk cement bin. The 2-cu. yd. batcher is located directly below the aggregate bin. CENTER: Three White trucks equipped with new 2-yd. Rex transit mixers, in the company's yard. RIGHT: Bulk cement is unloaded from cars by way of a collection chute to a 10-in. screw conveyor. Cement is raised by a totally-enclosed bucket elevator on 38-ft. centers to the 300-bbl. cement bin on the left. A 10-in. screw conveyor carries cement from the bin discharge up a 30-deg. incline to the weigh batcher beneath the aggregate bin. Aggregates are weighed on a 3-beam Winslow scale. Water is added in the mixers from a 500-gal. storage tank. The plant design is such that trucks need make only one stop for complete loading of the mixers, with a capacity of about 75 cu. yd. of ready mixed concrete per hour. The Ready Mixed Concrete Co. is affiliated with the J. W. Brannan Sand and Gravel Co.



France Stone Co.'s Ship Loading Terminal



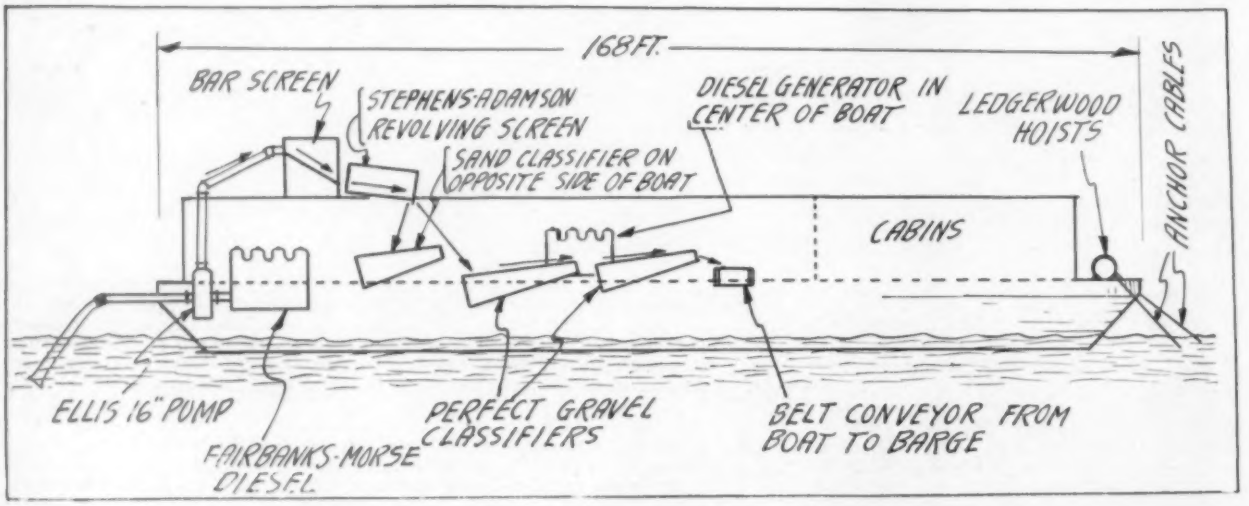


ABOVE—France Stone Co., Toledo, Ohio, constructed this ship-loading terminal at Toledo, in 1936, to ship slag to Lake Erie ports. This equipment is designed to load a 5000-ton ship in 10 hrs. The 36-in. Columbus belt conveyor above is driven through a Farrel-Birmingham gear reducer and discharges direct to the Allis-Chalmers 50-ft. elevator. Slag is raised to a 24x24-in. telescoping chute.

BELOW—The two short Columbus conveyors carry the hopper load at 120 ft. per minute to the 80-ft. centers conveyor, traveling at 250 f.p.m. Accumulative tonnages are recorded in the operator's cab through the Toledo scale on the long conveyor.

LATEST IN MISSISSIPPI RIVER GRAVEL DREDGES

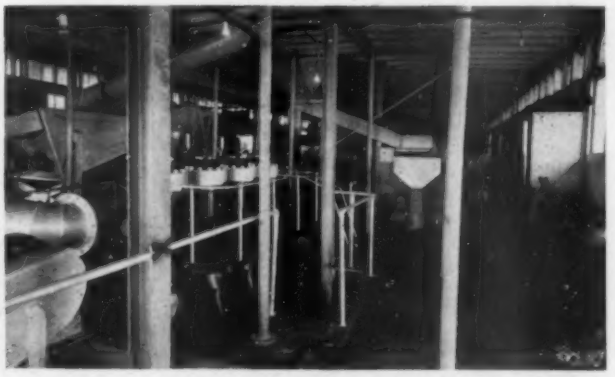




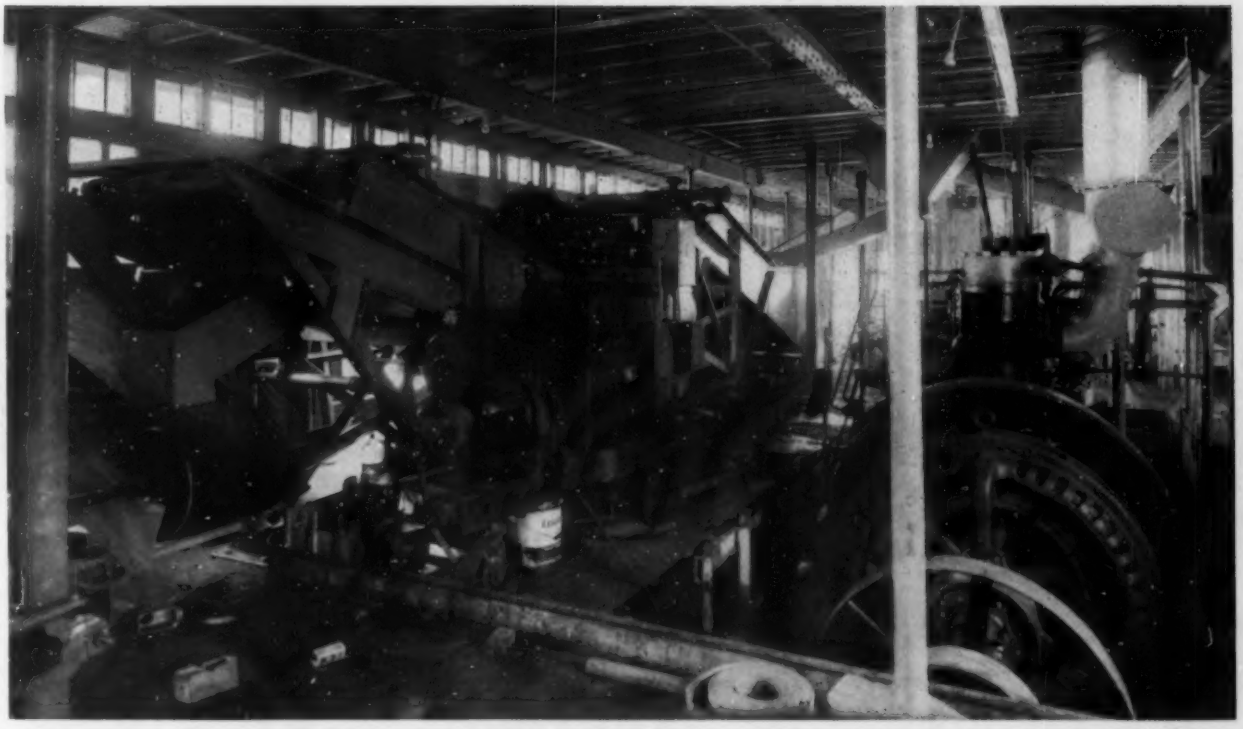
TOP: The "Milly Fry," a 40 by 168-ft. dredge owned by the Greenville Sand and Gravel Co., Greenville, Miss., was equipped in 1936 with pumping machinery and classifying equipment for processing sand and gravel. Note the long suction pipe for deep excavating. ABOVE: Flow sheet and equipment arrangement for preliminary washing of aggregates.



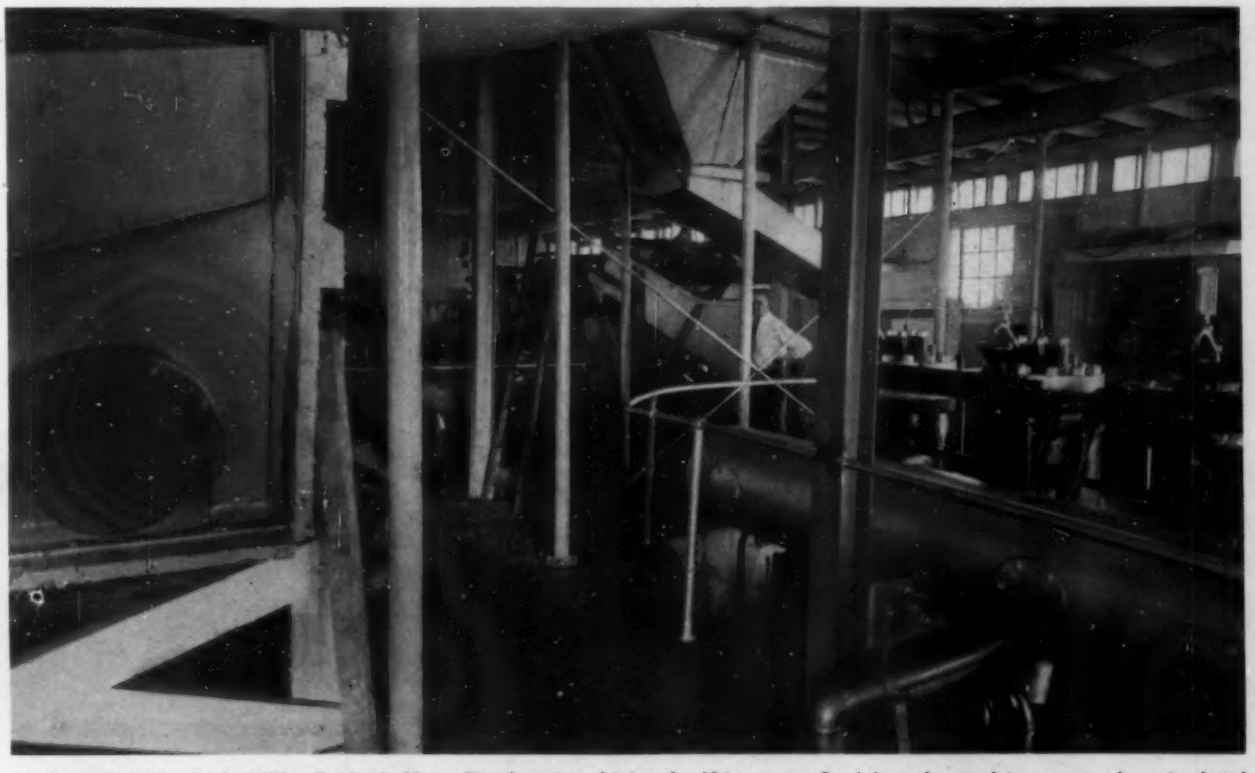
The discharge from the 16-in. Ellis pump passes over the 4 by 12-ft. Stephens-Adamson revolving screen and gravel and sand are separated for processing below deck.



The 240-hp. Fairbanks-Morse Diesel engine in foreground drives the dredge pump. The Perfect classifier on the left receives sand from the revolving screen.



Washing equipment and Diesel engines aboard the "Milly Fry." Plus ¼-in. gravel is chuted from the revolving screen above to the 60-in. Perfect gravel classifiers shown. A double washing of all gravel is done by setting the classifiers in tandem. The discharge from the second classifier is chuted at 125 tons per hour to the 20-in. Link-Belt conveyor on the left for barge loading. Gravel and sand are hauled by barge to a stationary land plant for final sizing. The 240-hp. Fairbanks-Morse Diesel engine and 170 kv.a. generator, as a unit, supplies power to all electric motors on the dredge.



On the right is the 4-cyl., 240-hp. Fairbanks-Morse Diesel engine, driving the 16-in. pump. Sand from the revolving screen above is chuted to the 48-in. Perfect sand classifier on the left. Washed sand, at the rate of 60 tons per hour, is chuted from this classifier to barges for shipment to the stationary plant.



The new plant of Belle Isle Lime Co., Detroit, Mich., uses kiln gases to preheat stone at it enters the kiln. Stone from stockpile is reclaimed by belt conveyor in a 112-ft. tunnel. A 60-ft. Jeffrey bucket elevator raises stone to a hopper in the right-hand building, which feeds to a preheater, where stone is heated to 1000 deg. F. or more before it is removed by a Jeffrey mixed current electric vibrator, to be elevated and fed to the kiln. Hydrating equipment, separators, baggers and a pulverizer are housed in the building on the left.

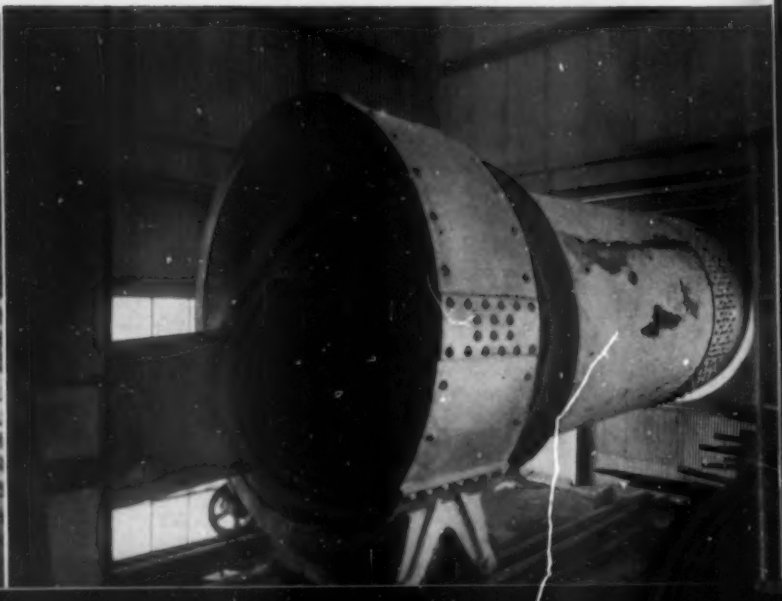
DETROIT'S NEW ROTARY-KILN LIME PLANT

BELOW: Looking at the feed end of the 6x100-ft. Vulcan kiln, with stockpile and preheater in the background. RIGHT: Petroleum coke is received by car and carried by a Jeffrey pan conveyor, followed by a Jeffrey bucket elevator, to storage. Pulverizing is done in a Raymond Imp mill of the air swept type and the fuel is forced through the pipe shown to the kiln hood. Because of high preheat temperatures, the kiln is operated at a higher speed and carries a much heavier load than is normal for such a kiln. BOTTOM LEFT: Quick lime is stored in pebble form in the steel bin in center. Pulverized lime is stored in the bin at the left and is placed in paper bags by the Bates valve bagger. RIGHT: Firing end of the kiln.











Ohio Quartz Products Co., Jackson, Ohio, excavates its cemented pebble quartz deposit in typical quarry fashion. The gravel is compacted, giving the appearance of sheer solid rock. Blast holes are made by well drills. Sand and pebbles exist in layers interbedded in various relations



Undesirable gravel and conglomerations are removed in the process of hand excavation. Two-yard Ford end-dump trucks are filled by a Jeffrey loading conveyor, which discharges over a grizzley. After removal of objectionable matter, the trucks dump direct to a rotary screen in the preliminary sizing plant

QUARTZ QUARRIED AND PREPARED FOR REFRACTORY BRICK MAKING

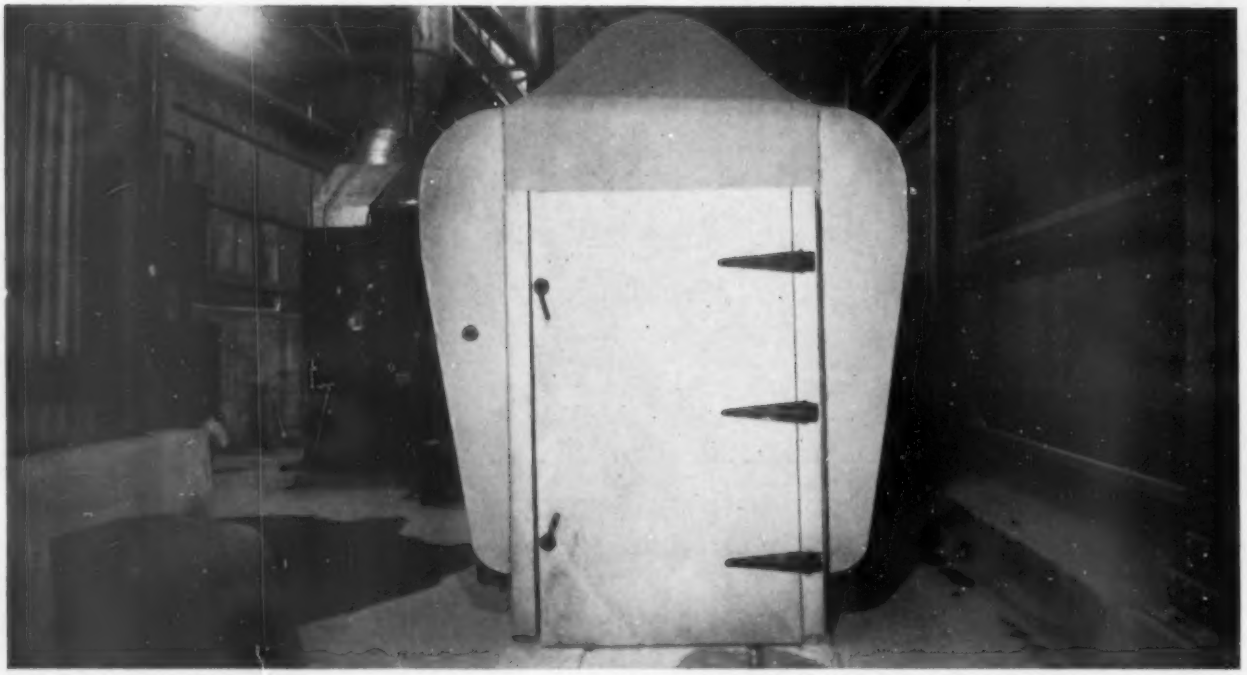
UPPER LEFT: This Boyd press is capable of making 5,000,000 silica brick annually. The feed is automatically controlled, finished brick are removed by a mechanical off-bearer. UPPER RIGHT: The commercial silica plant is designed for accurate control of particle sizes—so necessary in the manufacture of silica brick. The drying unit is to the left; eight 50-ton steel bins in the center; brick plant to the right. LOWER LEFT: Moisture is removed from all silica through this 5 x 45-ft. coke-fired Bartlett-Snow rotary dryer, at the rate of 15 tons per hour. The heated silica (300 deg. F.) is dropped from the discharge end to the foot of an elevator. Silica is allowed to cool to atmospheric temperatures before being sized. LOWER RIGHT: Hot air, either from the kilns or an auxiliary furnace, is pushed through the brick dryer at 200 deg. F. by this No. 6 Clarage fan. After 24 hours in the dryer, brick are removed to the kilns and fired at 2800 deg. F.







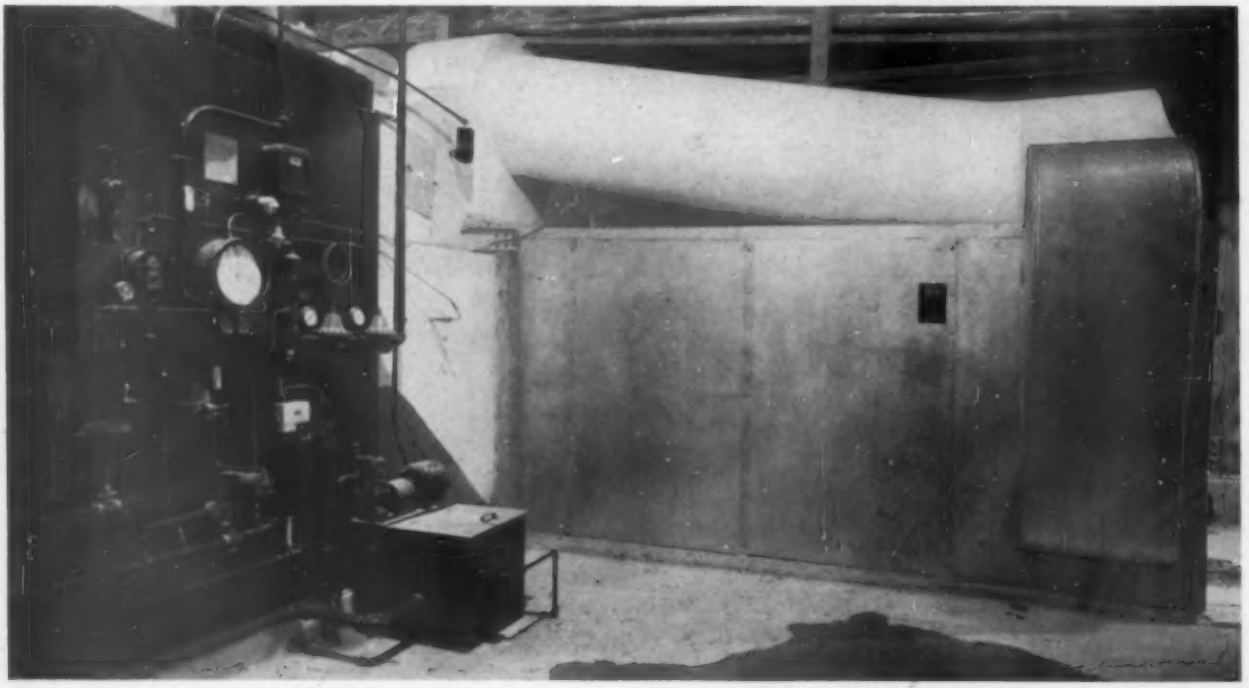




Probably the first application of a Coe dryer for the removal of moisture from chalk. This view was taken from the discharge end of the 35-ft. dryer. $CaCO_3$ in pallet form is wheeled in to the dryer on 30-in. rails from the far end with 60% moisture and submitted to a hot air circulation at 400 deg. F. After an hour in the dryer, the moisture content is reduced to 1/10 of 1%.

Here's something new—A precipitated calcium carbonate dryer—installed in 1936 at York, Penn., lime plant of the National Gypsum Co.

Since the installation of the dryer, a much finer product has resulted because of the accurate control now possible, and the dryer has doubled the output of the plant. Air is heated by the Ross oil furnace at the left, temperatures being accurately regulated by a Foxboro automatic temperature control. Heated air makes direct contact with moisture-laden $CaCO_3$ in the dryer.



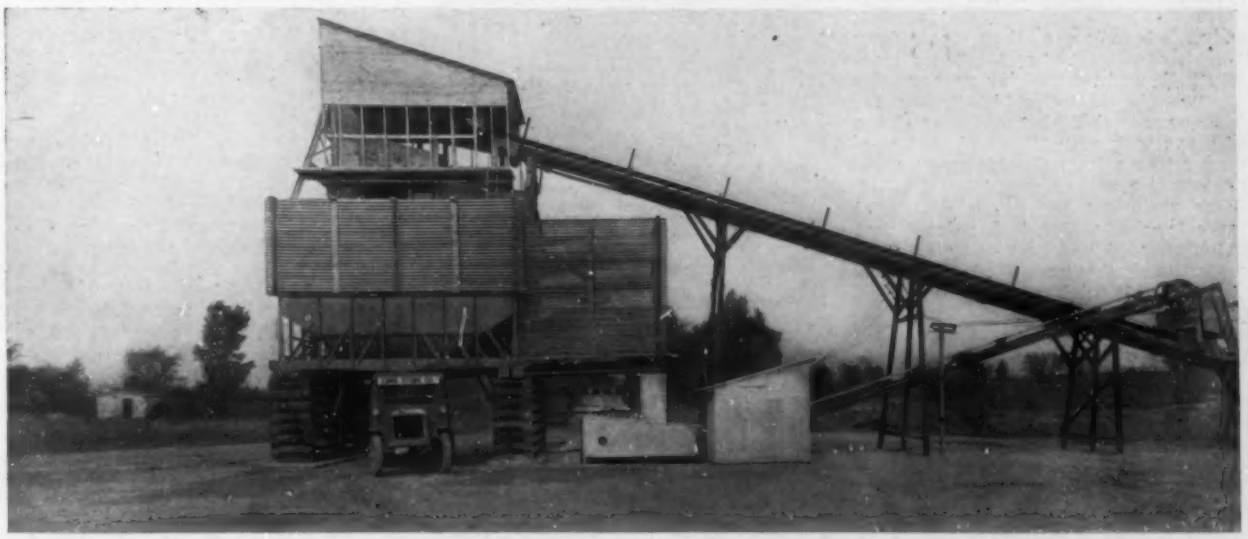


This attractive, efficient plant was built in 1936 by Long Stone Co., Lima, Ohio, to replace, at minimum cost, the original one, destroyed by fire in 1932. Truck loading was installed to replace the old car and rail system, and the 250-ft. centers belt conveyor carries rock direct to the screen. Four months were required to build the plant and start production, using company labor.

OHIO'S NEWEST CRUSHED-STONE OPERATION



The truck ramp above the 5 K. Allis-Chalmers gyratory primary crusher is built of railroad ties. Stone from this crusher passes directly up the belt conveyor to the sizing screen.



Bins are made from two standard, bottom-dump, railroad-car bodies, on which are superimposed "open" bins of 2x6-in. plank construction. The planks are spiked, with 2-in. gaps between them, and cross braces bisecting the bins satisfactorily support full bin loads. These bins are readily taken apart and put together, and the rotting of wood from moisture is minimized by free circulation of air in and around the planks, drying them out. The 60-ton surge bin above the 3-ft. Symons cone crusher will permit an additional hour's run in case of a breakdown or shutdown of quarry operations. This crusher product is returned to the 4½-deck Productive Equipment Co. vibrating screen.

Increase in Sand and Gravel Production 1936 Over 1935, Was 30 to 35 Per Cent

Members of National Association in Annual Convention at Memphis. Also See Further Increase in 1937 "Civilized America"

ATTENDANCE at the 21st annual convention of the National Sand and Gravel Association, while not up to expectations in numbers, exhibited optimism. Reports by directors showed a marked volume increase in 1936 over 1935, probably between 30 and 35%, and conditions in general indicated a good increase to follow in 1937, with a possibility of better prices. The business sessions were held at Memphis, Tenn., December 7-10.

Officers

The officers were reëlected unanimously to serve for 1937: Alexander Foster, Jr., Philadelphia, Penn., president; J. Rutledge Hill, Dallas, Tex., vice-president; Harry S. Davison, Pittsburgh, Penn., secretary-treasurer. The executive committee, in addition to the officers, comprises: Chas. M. Cadman, San Francisco, Calif.; Geo. W. Renwick, Chicago, Ill.; M. A. Neville, Lafayette, Ind.; John M. Settle, Louisville, Ky.

Future of Highways

President Foster, after his opening address in which he reviewed various possible markets, introduced the first speaker, MAJ. ROY F. BRITTON, director of the National Highway Users' Conference, who spoke on: "Are We Through Building Highways?" He traced the history of highway building in the United States and discussed gasoline tax diversion, concluding with the statement that every effort will be made to discourage diversion.

Maj. Britton said that the revenue from traffic in gasoline on railroads amounted to more than that from wheat, corn, cotton and tobacco combined. In reply to railway propagandas against the spending of money for highways, it could be said that if the railways took only 5% of present passenger traffic from the highways, their passenger revenues would be doubled. After reviewing the origin of special taxes for roads, Maj. Britton said that $11,000,000,000 had been collected from motorists and spent, but that two-thirds of our total road mileage as yet is unimproved.

He said that the social and economic benefits from roads were greater today than ever before, and that all benefiting by the use of roads should share in their costs. Among the benefits singled out were those derived by individual communities because of increased land values and facilities, benefits to the government for transportation of mail and armies and the necessity of roads to get freight and passengers to and from the railroads.

Maj. Britton spoke of the economic surveys now being conducted by the U. S. Bureau of Public Roads, from



Charles M. Cadman, new member of N.S. G.A. executive committee from the West Coast

which will come rational budgets for the building and improvement of roads. He pointed out that there was no new highway legislation contemplated, and that local tax rates should not be set until such economic surveys were completed.

Discussing diversion of taxes, Maj. Britton said that special taxes on the use of automobiles are justified only inasfar as they benefit the contributor. The seriousness of such diversions to producers of aggregates is best illustrated by the statistics. In 1936 alone, said Maj. Britton, $150,000,000 had been diverted to other purposes in 35 states. That would have been sufficient to pave a road from New York City to Chicago to New Orleans and from New York to Jacksonville, Fla.

According to Maj. Britton, the general public frowns upon tax diversion, and it will be increasingly difficult in the future. Missouri, Minnesota, Kansas and Colorado were mentioned as states that have already amended their constitutions to prohibit diversion.

Highway planning surveys now in progress in 45 states would develop long-range rational programs at a fair rate of taxation, he said. With 25,000,000 vehicles in use today, the U. S. Senate committee on roads has said that there is always a legitimate demand for highway building, and with 30,000 deaths and 750,000 injuries annually, everything should be done to reduce hazards. In conclusion, Maj. Britton said that we are not through building roads, that road-building is an ever-continuing process which must proceed on scientific planning and modern engineering. The immediate trend along these lines is for widening and straightening existing roadways, the completion of through routes and the continued construction of grade separations.

Mississippi Highway Program

E. D. KENNA, director, Mississippi State Highway Commission, gave an extemporaneous address on "Planning and Executing a Well-Balanced Highway Program"—the ambitious Mississippi program undertaken this year, which has created national interest and is making great demands on the capacities of local sand and gravel plants.

The present program calls for the expenditure of $42,500,000, of which $38,000,000 must be under contract before July 1, 1937. According to Mr. Kenna, 2½ cents of the existing 6-cent gasoline tax is turned back to the counties for the retirement of highway bonds, and the remaining 3½ cents has been instrumental in raising slightly more than $1,000,000 annually for highway construction.

He said that the original PWA grants required the building of bits of roads in 75% of the counties, but that such road building was done with a view to the future. He stressed the importance of relocating roads from an economic and safety standpoint. A few examples were given. On 15 projects, by relocating the roads, 127 miles were reduced to 82, a saving of 45 miles: On another series of projects, 19 grade crossings were reduced to 3 and 417 hazardous curves were reduced to 57 easy, safe curves.

With $18,500,000 as the state's share on the present program, and a total of $42,500,000 from all sources, a priority program of 2700 miles was established. Mr. Kenna said the highway force of draftsmen was increased from 40 or 50 to 185, working three shifts. At present, he said that $22,000,000 in contracts had been let and that 800 miles were being graded or having drainage work done and 400 miles were being paved. He closed by saying that with the completion of the present program, Mississippi will have 2000 miles of first-class highways, and will owe $23,000,000. Other appropriations for further paving are expected to follow.

Association Finances

The first morning's session was concluded with a report on "Program of Association Activities in 1937," by R. J. Potts, Waco, Tex., past-president and chairman of the committee on finances and budget. A budget for the year 1937, as recommended by the committee on finances and adopted by the board of directors, was submitted for discussion. Mr. Potts recommended, that with business increasing for the members, there was an ever-growing need of the asso-

ciation and that its scope should be enlarged. He urged that the research laboratory be reopened on a larger scale, and suggested a greatly enlarged budget as well as the employment of a capable business manager to assist the executive secretary in conducting association affairs. It was suggested that the board of directors give proper consideration to these recommendations. The budget as submitted for 1937 was approved and adopted.

An afternoon session was set aside for discussion of proposed constitutional revisions, a discussion of construction prospects for 1937 and brief reports on business conditions from members representing all sections of the country.

E. GUY SUTTON, Mattoon, Ill., reported for Alexander W. Dann, Pittsburgh, Penn., past-president and chairman of the committee, on suggestions for a more efficient operating plan for the association. One of the proposals was to have a director to represent each state on the board of directors. After considerable discussion, it was moved and seconded that the present system was the most satisfactory. A motion was made and passed that former presidents of the association be members of the board of directors and that the number of directors at large be increased from 3 to 5.

Construction Prospects

An optimistic outlook for future business was forecast in a paper, "Revival of Private Construction and Prospects for 1937," by THOMAS S. HOLDEN, vice-president, F. W. Dodge Corp. and president, New York Building Congress.

It was pointed out that the increased construction volume in 1934 consisted entirely of publicly financed work and that private work got its real start on the upgrade in 1935. In 1936, such work increased $510,000,000 over the 1935 figure reported for 37 states, while public work increased by $327,000,000. Mr. Holden said that national income climbed from its low of $45,000,000,000 in 1933 to $60,000,000,000 in 1936 and that business conditions now are on about the 1931 plane.

He said that factory building in dollar volume of contracts in 1936 exceeded the figures of 1931 by 70%, indicating that manufacturers in 1936 have been planning for increased production and sales in the future. The present expansion period was called the third great expansion era of this country. The first was designated as the era of colonization; the second the era of industrialization climaxed by the World War, the post-war boom and the artificial prosperity which blew up in 1929; and the present one as the era of civilization.

It was explained that in addition to the minor business cycles, there is a major cycle of 60 years' duration marked at either end by a serious and prolonged depression. Mr. Holden believes that our recent depression is of this order, in which event anyone in the sand and gravel business is unlikely to see another depression like it in his lifetime.

THOMAS S. HOLDEN said there are three periods of great expansion in this country: (1) Era of colonization; (2) era of industrialization; (3) era of civilization—just starting.

The era of civilization just beginning, he said, will be marked chiefly by more and better housing facilities. We have as yet hardly felt the effect of this coming demand.

He said that the greatest and most immediate need in the "Civilize America" program is the need for more and better housing facilities; and he estimated the potential demand for housing at from 500,000 to 1,000,000 new family units annually for 10 years. Statistics in 37 states showed 40,000 new dwelling units in each of the years 1933 and 1934, with 90,000 new units in 1935, and about 144,000 in 1936. These figures show a good increase, but as compared to the demand reveal enormous possibilities of an increased housing volume. Mr. Holden's prediction for 1937 is "substantial progress in home-building and a substantial but not spectacular increase in volume of construction."

He suggested the electrical industry as being next in importance to the home-building industry in the "Civilize America" program and the important part road-building has played and will play in civilizing the country. He said that expenditures for this class of work were 35% greater in 1936 than in 1935, but expected a moderate decrease in 1937, due to expected efforts to reduce emergency federal expenditures. Bridge building, according to Mr. Holden, is likely to show an increase in 1937, factory building may be expected to gain considerable acceleration; there should be a substantial increase in commercial building of the smaller types, and a moderately reduced program of public building is anticipated.

Private Building Gains

A comparison of the trend away from public to private construction was made. The gain in dollar volume of construction contracts in 1934 was 23% over 1933—practically all in public works. In 1935, figures showed a gain of 20% over 1934, due almost entirely to private work. The combination of a peak public works program and a large gain in private work, according to Mr. Holden's report, brought a 1936 increase of 45 to 50% over 1935. His final summation for 1937, as compared to 1936, was as follows: "Commercial building may be expected to increase 30 to 35%; residential construction about 40%; privately owned utility construction, probably 50%; factory building, perhaps as much as 60%." In conclusion, he said that still better years could be expected beyond 1937.

Mr. Holden's optimistic forecast was followed by five-minute discussions by sand and gravel producers representative of the United States and Ontario on business conditions in their respective areas. These reports likewise were enthusiastic. Producers from 19 areas reported to a list of nine assigned questions, as follows:

Business Conditions

ALEX. FOSTER, JR., Philadelphia, Penn., reporting for the area west to Harrisburg and including Philadelphia as well as part of New Jersey, said that tonnage in 1936 was 1,700,000 as compared to 1,400,000 in 1935, and that the price level was lower, due to a breaking down of the price structure. Volume of demand to capacity averaged from 30 to 50%, of which 55% went to highway construction, 45% to other structures and no tonnage to railroad ballast. He predicted the same tonnage and price level for 1937, and said that there was diversion of gasoline tax proceeds, of which some is to be restored for 1937. He said that government plants and portables were unimportant in this area.

ANDERSON DANA, New York, N. Y., speaking for metropolitan New York, said that the volume of sand and gravel sold in 1936 was 4,500,000 cu. yd. compared to 3,400,000 cu. yd. in 1935, with a lower average price. Prices f.o.b. dock averaged 94c in 1935 and 80c in 1936. The relation of volume of demand to capacity was slightly less than 50%. Some 20% of demand was for highways, 30% for building construction and 50% for heavy construction. A greater volume of highway and building construction in 1937 was predicted, as well as in other lines, with an estimated total yardage of 7,000,000. Considerable demand is expected for private building, for housing, and in the building of approaches, parking facilities, etc. for the 1939 World's Fair. It is expected that highways will take 25% of the output in 1937, that 40% will go to building construction and the remainder into heavy construction. In the past four years $200,000,000 were diverted. In 1935, $100,000,000 was collected, of which $58,000,000 was diverted. In this area there are no government plants or portables.

P. W. GIFFORD, Dallas, Tex., reported for the states of Texas and Louisiana: The volume of sand and gravel business was up 10 to 14% in 1936 over 1935, with a slightly higher price. His company's demand as against capacity was 35%, with from 38 to 40% for the entire area. About 70% of his company's business went into highway construction, 15% to building construction, 5% for railroad ballast and the remainder to miscellaneous uses; expects a decline in business of 10% in 1937, with less federal money for highways and hopes for an increase for other purposes. In Texas, 1 cent of the gasoline tax has been diverted for schools and 1 cent to retire bonds. There is no diversion in Louisiana. Has not suffered from government-operated plants and only

slightly from the WPA program. In this area commercial producers must use portables to hold their business.

CHAS. M. CADMAN, San Francisco, Calif., reporting for an area of 180,000 sq. mi. in northern California, said that the volume of business was up 60%, with an increase of 8½% in price. The average volume of demand to capacity was 32%, of which 44.5% of the output went into highways, 38% into building, 13% for railroad ballast and 4½% into other uses. An increase in volume as well as in price is expected for 1937. He said that the output in 1937 would likely have about the same percentage of distribution as in 1936. There has been no outright diversion of gasoline tax proceeds, but some money has been borrowed, to be returned later. About $8,500,000 has been borrowed for use in schools. This area has suffered greatly from government-operated plants, directly and indirectly. The man hours provisions of the PWA program have made it attractive for contractors to produce their own aggregate. It is expected that the number of contractor plants will increase, many of which will remain as stationary plants.

H. F. G. PELSUE, Los Angeles, Calif., in submitting his report for southern California, gave figures for sand, gravel and crushed stone. According to his tonnage figures, the volume of business in 1936 exceeded 1935 by 71%, with a drop in price of 30%, which is offset somewhat by a reduction in production costs. About 3,500,000 tons have been used so far for large projects, such as the Metropolitan Aqueduct. These aggregates are produced at the project site. The ratio of volume of demand to capacity is high, partly because of the obsolescence of existing plants. About 31% of the business went to highways, 51% to building construction, a slight amount to railroad ballast and about 16% for other purposes. For 1937, a possible decrease in volume is expected, with a higher price. Highways are expected to take a larger percentage of production, building construction to remain stationary, with a decrease in other uses. This area has not suffered from government competition, and portable plants have been used for large projects, which are justified for lack of shipping facilities.

HENRY N. BATTJES, Grand Rapids, Mich., said that the volume of business in his area increased about 35% in 1936, and that the price level was about the same in 1936 as in 1935. The volume of demand to capacity was 50 to 60% in 1936, of which 50% of the total production was used for highways, 32% for building construction, 9% for railroad ballast and 9% to other uses. An increased demand of 10% is expected for 1937, without any price change. Estimates of the distribution of aggregates in 1937 are 40% for highways, 42% for building construction, 11% for railroad ballast and 7% for other uses. He said that there had been no diversion of gasoline tax proceeds, and that portable plants were being operated in nearly all counties, but were not producing washed aggregates. About 50% of the total production was by portable plants, and no commercial producers are operating portable plants.

GEO. W. RENWICK, Chicago, Ill., reporting by letter for the northern half of Illinois and Northwestern Indiana, said that the volume of business had increased 25% in 1936, with a reduced price due to demands for lower grade materials. Volume of demand represented 50% of plant capacity, 65% of the output going into highways, 15% to building construction, 15% for railroad ballast and 5% for miscellaneous uses. Prospects for 1937 are better, without any price changes. It is estimated that 60% of the output will go into highways, 18% into building construction, 17% for railroad ballast and 5% for other uses. About $6,000,000 highway money was diverted in this area. He said that government-operated plants had not materially affected business and that portable plants had not replaced stationary plants, although taking as much as 50% of the local highway business.

Large Increases

E. J. NUNAN, Buffalo, N. Y., reporting for western New York State, said that the volume of business was up 60% in 1936 in the cities and had increased 25% for the outlying plants, with an unchanged price level. Volume of demand represented about 50% of capacity in this area, with 60% going into highways, and 40% for railroad ballast and other uses. As far as 1937 is concerned, business should be better in the cities, with a probable decrease in the outlying districts, and a higher price. Of this business, 50% should go into highways and 50% into general building. More than 50% of gasoline tax proceeds have been diverted. Out of $104,000,000 collected last year, only $15,000,000 went into highway work. Have not had any difficulties from government-operated pits and very little from the WPA program. Portable plants have not displaced stationary plants and none of the commercial producers operate such plants.

JOHN PRINCE, Kansas City, Mo., reporting for Kansas, Missouri and Oklahoma, said that the 1936 volume of business was up 20% over 1935, that prices were the same as in 1935 and that the demand represented 40% of the capacity of existing plants. A 10 or 15% increase in business was forecast for 1937. There has been no diversion of gasoline tax proceeds in Kansas and Missouri but 40 or 50% of the money was diverted in Oklahoma. In Kansas, there have been some small plants operated by WPA labor. In this area, stationary plant operators do not use portables.

LEE T. MCCOURT, Memphis, Tenn., reported conditions as very good in east Arkansas, Mississippi and west Tennessee, due to government activities in the Memphis section and the Mississippi highway program. Memphis plants have been operating 24 hours daily throughout the year. The volume of business in 1936 was up 65%, with a slightly increased price. The output represented 50% of the capacity, with 90% going to highways, 8% to building construction and 2% to railroad ballast. For 1937, he said that building construction and railroad ballast business is likely to increase, with a distribution of 75% to highways, 15% to private building and 10% for railroad ballast. Of a 7 cent gasoline tax, 2 cents is turned over for retirement of the bonds, 1 cent goes to the counties, 1 cent to the general fund, 1 cent for interest on the bonds, 1/10 of 1 cent to the commission, leaving 9/10 of 1 cent for highway construction. He said that the industry had not been affected by government-operated pits, although clay gravel is produced by WPA labor around Memphis. There are several established producers operating portable plants in Mississippi.

GEORGE E. SUTHERLAND, Charleston, W. Va., reported by letter on West Virginia only. He said that plants have been operating at near capacity furnishing aggregates for the Tygart River dam and other government jobs. Prices in 1936 were the same as in 1935. Very little of the production went into highways and railroad ballast. Prospects for 1937 are dependent on what is to be done with gasoline tax money. There has been some diversion of these proceeds, and the main road work has been the repair of blacktop surfacing. The effect of government-operated plants has been negligible.

W. J. BROWN, Chattanooga, Tenn., reporting for southeastern Tennessee, northwestern Georgia and northeastern Alabama, said that because of large available quantities of stone, sand and gravel, business has been confined to the smaller projects. In 1936, production was up 20%, the price level was the same, the output was 40% of the capacity and 50% of the production went into highways, 40% into building construction and none for railroad ballast. He anticipated the same volume and prices in 1937, with 30% for use in highways, 50% for building construction and 20% into miscellaneous uses. Only 9/10 of 1 cent of the 6 cent gasoline tax actually is being used for highway construction. Government-operated plants are producing much coarse aggregate for Chickamauga dam and other large projects, but purchase the sand. Portable stone plants have given some competition.

H. P. CALDWELL, Louisville, Ky., speaking for Kentucky, reported a 38% increase in business in 1936 along with a price increase. The demand was 50% of the capacity with 45% going into highways. 45% into building construction, 5% for railroad ballast and 5% for other uses. He said that prospects were good for 1937, if prices maintain the present level. Many large government and distillery jobs are nearing completion, so an anticipated drop in such types of construction is expected. He said that the law in Kentucky prohibits the diversion of highway funds. There is little trouble from government-

owned plants, although two county-owned plants have been getting some secondary road work. Portable plants are not a problem, the existing commercial plants being of floating type.

E. GUY SUTTON, Mattoon, Ill., for Wabash Valley producers in central Illinois and central Indiana, reported increases of 10 to 35% in business for 1936 over 1935 with an average of 20%, and the same price level as in 1935. The volume of demand was 50 to 60% of the 1928 capacity, with a distribution of 40% of the output into highways, 15% into building construction, 40% for railroad ballast and 5% for miscellaneous uses. A 10% increase in volume is anticipated in 1937 and a higher price as well. He estimated that 50% of the 1937 production would be used for highways, 20% for building construction, 15% for railroad ballast and the remainder for other uses. He said that $4,000,000 was diverted annually for relief and schools in Illinois, but that there was no actual diversion in Indiana. As far as government competition is concerned, WPA labor has been working wayside pits and stone quarry waste piles for low grade road construction, but with no business loss to existing producers. Portable plants are not replacing stationary plants in this area, but if the farm to market road programs continue, adjusted freight rates are necessary or stationary operators will be forced to operate portable plants.

Counties Own Plants

E. H. NORBLOM, Minneapolis, Minn., reported average figures from questionnaires mailed out in Minnesota. The business volume was up 35% in 1936, with 20% of the operators reporting a lower price, 30% reporting the same price as in 1935 and 50% getting a higher price. The volume of demand was 40% of capacity. Grain elevators and other industrial buildings used 40% of the output, highways 35% and the remainder went for other uses. For 1937, 20% of the producers expect a decrease in business, 40% expect to remain at the 1935 level and 40% anticipate an increase, the average opinion being an increase of 15%. The price level will probably be unchanged. He said that the output will likely be prorated at 30% for highways, 40% for building construction, none for railroad ballast and 30% for other uses. There has been no diversion of funds. There are no government-operated plants in some areas, but as high as 50% of the plants in some counties are so owned. The tendency is for more and more portable plants, and with present freight rates in excess of 40 cents it is difficult to compete with such plants.

RAY V. WARREN, Pittsburgh, Penn., restricted his report to western Pennsylvania. The average business increase was 32%, with two counties reporting as high as 81%. Prices were up and are holding well enough to warrant an expected increase in 1937. The demand was 50% of the capacity, and mainly went into industrial construction. A larger volume of business is forecast for 1937, based on continued industrial construction, some large projects and an expected upswing in residential building. About $17,000,000 has been borrowed from the gasoline tax receipts, which will likely be returned. Legislation is coming up which will likely prevent future misuse of such funds. There are no government-operated plants in this territory and no portables.

G. G. ROBINSON, Toronto, Ont., reported by mail that Ontario had had an increase in volume of business upwards of 50% in 1936, along with a slightly higher price. The volume of demand represented 25% of the 1929 capacity. Of this demand 65% went into highways, 20% for building construction and 15% for railroad ballast. An increase in these classifications was predicted for 1937, but with some question as to price. The distribution as to use is expected to be in the same proportions, in 1937. There is little information on the subject of diversion, and government-operated plants are not in favor with the government. Portable plants have been quite a factor in the last few years, but the trend is for fewer of these plants, and this business is likely to go back to the commercial producers.

PAUL P. BIRD, Boston, Mass., reported that the volume of business in the six New England States was up 35% in 1936, with lower prices in some localities and higher in others. The distribution in 1936 was 60% for highways, 30% for building construction and 10% for other uses. Producers in this area are not optimistic about 1937 and expect the same distribution of their products. Diversion of gasoline tax proceeds has been as high as 40% in Massachusetts, with an average of 17% for New England. There was no diversion in Maine, New Hampshire and Vermont. As to government-operated plants and portables, there has been no change in several years. Portable plants are extensively operated in the far north, where their existence is justified.

STANTON WALKER, Washington, D. C., consolidated the reports and submitted a brief overall report of conditions as summed up for the entire country. He said that the volume increase in business was about 32½% above that of 1935, with a range of 14 to 65%. On the whole there was no appreciable price change in 1936, with three regions showing a decrease. The volume of demand to capacity ranged from 25 to 65%, with an average of 50%. About 70% of the production of non-metropolitan plants went for highways, and plants in the cities sold 40% for highways and 45 to 50% for building construction. The general prophecy is for a small increase in production in 1937 and no price increase. A good part of this region is not affected by gasoline-tax diversion or portable plants. The trend is away from portable plants and those operated by the government.

H. H. HUGHES, Bureau of Mines, Washington, D. C., volunteered that car loadings for 1936 showed a 35% increase for sand and gravel over 1935, a 29% increase for crushed stone and a 29% increase for slag.

Portable Plants

FROM REPORTS from all parts of the country where conditions are very different it is nearly impossible to draw conclusions that apply universally, yet it appears that portable plant competition is less a factor now than it was in recent years.

Obviously, one reason for this condition is the willingness of railway managements to grant special rates to established producers purposely to meet truck competition from temporary or portable plants. There is no way of knowing whether the railways are profiting from this particular business, except to point to the fact that by pursuing a similar policy with many lines of industry, the railways have recaptured much lost traffic and that their revenues as a whole are greatly increased.

Industrial Diseases

David S. Beyer, vice-president and chief engineer, Liberty Mutual Insurance Co., in his paper, "What the Employer Should Know About Silicosis and Other Occupational Diseases," said that about 20 states now have some form of occupational disease legislation, of which about six cover silicosis. He pointed out the benefits of such legislation from both the employer and employe standpoints. Mr. Beyer defined the disease and said that silicosis, when uncomplicated by other diseases, rarely, if ever, causes complete disability.

Silicosis law suits were described as a product of the depression, when men out of work were "looking for any possible source of income." Mr. Beyers said that when active tuberculosis was super-imposed on silicotic lungs the result is usually "sudden death," and pointed out that many deaths due to "silicosis" were found to be due to the two diseases. He emphasized the importance of separating tubercular employes from dusty jobs and said that the public has not generally realized the highly infectious nature of tuberculosis. Because of the ready communicability of tuberculosis, the importance of locating and caring for cases of active tuberculosis in the early stages was recommended as necessary if silicosis is ever to be brought under satisfactory control.

Preventive measures were reviewed, and the importance of the "unseen" dusts was stressed. Mr. Beyer suggested the use of exhaust systems to capture dust at the point of generation, and discussed the use of respirators and water. In his opinion, the industry, operating as it now does, is mostly free from the hazard. He said that there were very few cases on record in the

sand and gravel industry, but that many claims will come up which will be hard to explain. He recommended the use of preventive measures, especially where there is dry screening, crushing, and at the point of discharge of belt conveyors in dry operations, etc., and suggested the use of instruments for gauging the dust counts of samples.

The incentive for unwarranted claims by workmen has been reduced, with increased employment, according to Mr. Beyer. Substantial improvement in dust control, "dust conscious" employers, and more expenditures for safety made possible by better industrial earnings were mentioned as factors tending to reduce the hazard. The work of the National Silicosis Committee was outlined, with the conclusion that all the activities point to ultimate victory over the disease.

Social Security

The Hon. Vincent M. Miles, member, Social Security Board, in his paper, "What the Social Security Act Means to the Employer," familiarized the producers present with the obligations placed upon them, and explained in detail why the act should be defended. The need for social security, specifically in the case of the sand and gravel industry, was explained in view of the fluctuations in its business cycle for the past 21 years.

Mr. Miles said that the peak production of 222,572,000 tons of sand and gravel valued at $132,836,000 in 1929, dropped to 107,755,000 tons or 52% in 1933, with a decrease in value of 60%, throwing thousands of employes out of work. The major market, the construction industry, fell off 70% from 1928 to 1933. He pointed out the numbers of unemployed even in the best times and said that the insecurity of the people is with us in good times as well as during depressions. The Social Security Act was described as not being an emergency measure but as setting forth long-range plans for the future. The states which had unemployment compensation laws before the enactment of the Federal act were listed. About 40% of the sand and gravel production in 1933 was in states which now have unemployment compensation laws.

Mr. Miles said that the chief obstacle to such laws in some states—the economic handicap of adjoining states having no similar legislation—is now eliminated. He said that the pay-roll tax charges the cost of unemployment back to industry as an expense of production. The present act was described as being a budgeting to meet an inevitable cost, and as being better, from a business standpoint, than a hastily gotten together relief system when funds are more difficult to raise. The Old-Age Retirement Benefits, a second feature of the Act, was analyzed by Mr. Miles in some detail, to conclude his paper.

Safety

Franklin K. Wills, in his paper, "Safety Through Plant Organization," told of the safety program in use at the Van Sciver plant of the Warner Co., Philadelphia, Penn., that has been instrumental in winning safety trophies for this plant for 5 consecutive years. Mr. Wills said that accidents don't "just happen", that there is a definite cause and that an intensive study of these causes will abolish accidents. He described the highlights of the safety program adopted by the Van Sciver plant as having grown out of past misfortunes.

The essentials of Mr. Wills' address were published from another of his papers, in the November, 1936, issue of ROCK PRODUCTS.

V. P. AHEARN, executive secretary of the association, summarized the provisions of the Robinson-Patman and Walsh-Healey Acts as they apply to the sand and gravel industry, to familiarize the members of the industry with divisions of these laws, violations of which involve heavy penalties.

The Walsh-Healey Act, applying only to direct contractual relationships with the Federal Government provides for a maximum 8-hour day or 40 hours in any week unless overtime rates are paid, and prevailing minimum wages must apply to employes engaged in actual production or furnishing of the goods called for in the contract. The employment of minors is prohibited, working conditions must be healthful and not dangerous and complete records of employment must be maintained. The drastic penalties prescribed for violation of the act were pointed out by Mr. Ahearn, with the assertion that the Department of Labor intends to enforce the law vigorously in the future.

The Robinson-Patman Act was summarized briefly. The fundamental purpose of the act was described as "manifestly to prevent discriminations in price between different purchasers of commodities of like grade and quality where the effect of such discrimination may be to lessen competition or tend to create a monopoly to destroy competition, etc."

Quoting J. C. Gall, associate counsel of the National Association of Manufacturers, Mr. Ahearn said that the principal tests to be applied to any set of facts to determine whether section 1(a) of the Act has been violated are:

(*a*) Is there a discrimination in price?

(*b*) Is interstate commerce affected?

(*c*) Is the discrimination with respect to goods of the same grade and quality? If not, the discrimination is not unlawful.

(*d*) Is the discrimination based upon differences in methods in which sold or delivered?

(*e*) Is the discrimination the exercise of a seller's legal right to select his own customers?

(*f*) Is the discrimination protected by the provision of the act which states that nothing therein "shall prevent price changes from time to time where in response to changing conditions affecting the market for or the marketability of the goods concerned?

(*g*) Does the discrimination lessen competition, tend to create a monopoly, etc.?

The penalties to be imposed for violations of the Act were reviewed, and, in conclusion, Mr. Ahearn said that, in its fundamentals, the Robinson-Patman Act will survive the constitutional test.

Gravel Tests

ALEX. FOSTER, JR., and STANTON WALKER, director of engineering, National Sand and Gravel Association, reported on wear and strength tests of gravel and crushed stone concrete. The authors point out that most concrete tests involving different aggregates have been based on methods of proportioning which result in unequal cement contents and other varying conditions making direct comparisons, on a proper basis, difficult. As a result much confusion has arisen as to the effect of type of aggregate and, particularly, as to the effect of shape of coarse aggregate particle. For the tests reported an attempt was made to eliminate some of the variables which have led to confusion.

According to the authors a consideration of the structure of a concrete mixture should make it evident that, within broad limits, the shape of particle should not be expected to affect either the compressive or tensile strength, except insofar as it affects the proportioning of the concrete. The strength of concrete depends upon the strength of the mortar and of the coarse aggregate particles and upon the bond between the mortar and the coarse aggregate. Within wide limits the shape of particle does not affect the strength of that particle, nor does it have any effect upon the strength of a given mortar. The bond of the mortar to the coarse aggregate, they point out, is not influenced by shape of coarse aggregate particle since glue adheres just as well to a rounded surface as to a series of flat surfaces.

The paper stresses the importance of taking into account shape of coarse aggregate particle in the proportioning of concrete. Less mortar is required in the case of rounded aggregates than in the case of angular ones, to fill the voids and to spread the coarse aggregates apart so that a workable mixture is obtained. Therefore, for a given amount of cement, a richer mortar may be used with rounded aggregates than with angular aggregates.

As a result of tests made for the Warner Co. and those carried out by the association, the authors conclude that crushing gravel, for the purpose of making it angular, does not alter its quality as a concrete aggregate. In that connection they direct particular attention to the tests of the rounded and angular crushed stone.

The paper stresses the fact that the significance of tests such as those reported extends beyond a mere consideration of strength. They have a direct bearing on the problem of cracking of

concrete roads. The authors conclude, from a study of these tests and of many others along similar lines, that differences in cracking of concrete roads due to differences in aggregates come from differences in characteristics applicable to all aggregates, and that it can be maintained successfully that rounded aggregate concrete as a class does not crack more than angular aggregate concrete and that it does not have less ability to resist the factors which cause cracking.

Needed Researches

The invaluable benefits of a well-equipped laboratory and the need for thorough research in solving problems of a trade association constituted the paper of C. H. SCHOLER, professor of applied mechanics, Kansas State College of Agriculture. The aims, objects and difficulties of a research program were discussed as well as the weaknesses of present methods, the importance of their results and the budgeting of funds for research.

It might be well to list some of the things which, in Mr. Scholer's opinion, a research organization might be expected to do. These are:

(1) Develop new uses for the product or introduce its use in places or processes where another product or material has been used.

(2) Develop new processes of production, preparation and handling of the products to improve the quality or lessen the cost production, or both.

(3) Do trouble-shooting for members who are in difficulty with purchase specifications of customers and their tests.

(4) Do trouble-shooting for the industry and its members when competing materials have become too aggressive, or have misrepresented their product as it relates to yours.

(5) Study the failings and weaknesses of your product and be prepared to meet the problem by changed processes or separation of material and diverting the unsatisfactory material to other uses.

(6) Items 3, 4, and 5 should, insofar as possible, be anticipated in advance and a solution or specification be planned to meet the emergency.

(7) Be of assistance to customers in developing sound, economical and fair specifications covering the purchase and use of your product in construction.

Prof. Scholer cited the lack of certainty as to results that will be secured from research as being the main difficulty in setting up an adequate budget for such work. He said that C. F. Kettering, head of the research division of General Motors Corp., believes that the cost of research should be accounted for in the same way as insurance—on an actuarial basis.

He mentioned the stabilized road as a new outlet for sand and gravel products that came about mainly as the result of efforts of chemical industries, and suggested that such outlets and proposed specifications for them should come from the sand and gravel industry, instead of waiting for others to take the initiative.

Prof. Sholer suggested that adequate research on soundness of aggregates should have been made by the association before the products of some members were rejected, because of someone else's specifications. Another possibility, the use of bituminous materials in highway construction was suggested for work along research lines. He questioned why competitors' products were looked upon with favor in this field, and what had been done by the sand and gravel industry to show why such aggregates could not fill the bill. In concluding, Mr. Scholer said that he hoped the association would set aside adequate funds for research, as an added insurance for prosperity in the future.

Large Projects

P. J. FREEMAN, principal materials engineer, Tennessee Valley Authority, in his paper, "The Selection of Fine and Coarse Aggregates for Dam Construction," discussed some of the special problems relating to specifications for aggregate used in the construction of large dams. In this paper, the importance of the grading of fine aggregates and the durability of both coarse and fine aggregates were stressed. He said that dams are usually built too far from commercial sources of aggregate; hence, the TVA sometimes produces its own to use the most economical material.

He told of the researches made in connection with all sources of supply before selection is made. According to Mr. Freeman, some aggregates may have an effect on the heating of setting concrete. In coarse aggregates, he said that durability is the prime requisite. "Water gain" and "bleeding" of concrete were two conditions described. "Water gain" is the condition where water goes to the top, and in "bleeding" the water goes to the bottom; both result in an uneven distribution of cement. The grading of fine aggregates or the particular cements used were suggested as possible causes for "bleeding." Mr. Freeman said that too much emphasis could not be placed on the grading of fine aggregates when used for construction of dams, which present special problems. Grading of fines affects the workability, the density, the permeability, the strength and cost of placing concrete.

To emphasize the importance of grading of fines, Mr. Freeman said that often an ideal grading will give a 15% greater strength, while using 10% less cement, and that with such savings in cement, higher prices can and will be paid for sand.

Specifications and Costs

J. L. SHIELY, president, J. L. Shiely Co., St. Paul, Minn., in his paper, "High Costs of Production Resulting from Unwise Specifications," told of the hardships encountered by the sand and gravel producer in meeting too stringent specifications for aggregates. His discussion was based on recent experiences in furnishing materials for large projects. He said that, in his opinion, trends are toward a stabilization of specifications, after quite a bit of engineer experimentation at the producers' expense.

Mr. Shiely told of his experiences on the Fort Peck Dam project. He placed particular emphasis on care in reading every line of a government contract before signing an agreement. On this project, specifications were changed several times and at one time were construed as allowing no tolerances. This was changed to allow a 5% tolerance. As Mr. Shiely put it, try to size with square openings and a 5% tolerance and pass the tests through round hole openings. He said that the experimentation cost the Shiely Co. $100,000, and when prices were raised, the government threatened to cancel.

The specifications provided for a decantation loss of less than 5% by volume. Out of 190 cars tested daily, Mr. Shiely said that as many as 25 to 30 cars were rejected. Mr. Shiely discussed the use of "Rotoscoops" and said that as much as 50% water was added to control the fines. Another obstacle encountered was a 10% tolerance, which was seriously affected by the changing of opening sizes on sloping screens. Mr. Shiely's belief is that specifications must be coördinated with the kind and type of material to be used.

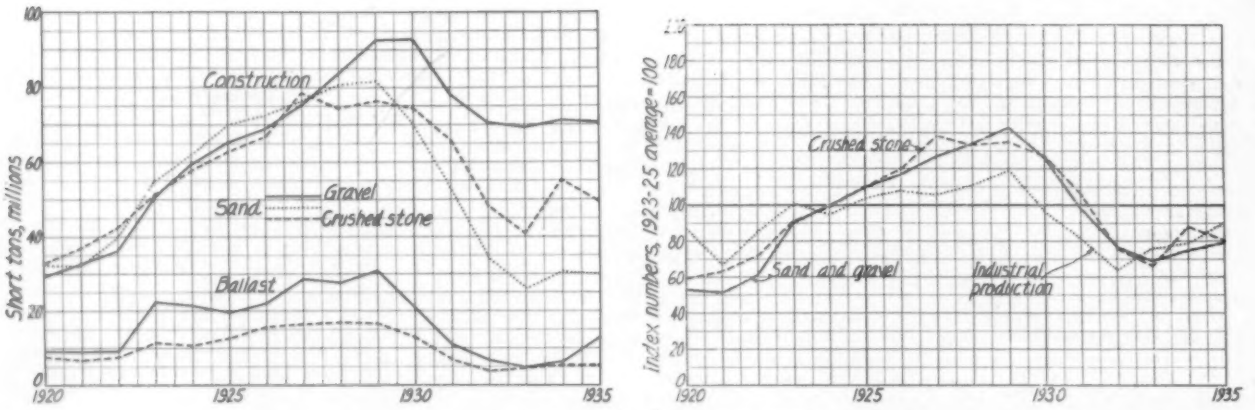
Traffic Bound Roads

T. E. MCGRATH, McGrath Sand and Gravel Co., Lincoln, Ill., reported by mail regarding experiences in finding a market for plant-prepared sand and gravel in traffic bound roads. Under the title "Market for Plant Prepared Sand and Gravel in Traffic Bound Roads," he described the fight made in Illinois against wayside competition.

The first step was to perfect a plan whereby special low freight rates could be established for specific deliveries to specific projects on short notice to meet the approval of the Illinois Commerce Commission. This was done and over 458 of these special rates ware so published, resulting in the holding of 5,000,000 tons of material for rail delivery from established plants.

A survey was made in Illinois, according to Mr. McGrath, to find new outlets for their products, because the concrete highway program in Illinois was so far advanced that future prospects for such outlets were reduced.

Figures showed that over 90,000 miles of unimproved secondary roads existed in the state of Illinois. Field men promoted single township bond issue projects and a wide field for new business was opened up. Petitions were circulated by farmers, asking for year-round roads, pamphlets were mailed out and the secondary road building program is well under way. Now that the townships in about half the counties have practically completed their farm-



LEFT—Gravel, sand and crushed stone used in construction and as ballast, 1920-1935. RIGHT—Production indexes of sand and gravel and crushed stone compared with Federal Reserve Board index of industrial production

to-market road systems, according to Mr. McGrath, steps are being taken to create a new outlet—the improvement of state-aid county main arterial roads with specification road gravel.

Bituminous Mixtures

The paper of JULIUS ADLER, consulting engineer, Philadelphia, Penn., "Nature of Bituminous Mixtures and Place of Sand and Gravel in Them," was timely, since comparatively little is known about these mixtures, which have assumed an increasing importance for use on roads in recent years. Bituminous mixtures were classified as according to the grading of aggregates into dense or more porous mixes and as plant mixes or road mixes.

In the dense mixture, the particles are coated to fill the voids, while in the porous or open type the bitumen used is not sufficient to fill the voids and stability is partly dependent on the interlocking of angular fragments. The bitumen for road mixes must be in liquid form and is classified as rapid curing, medium curing or slow curing, depending on the volatility of the mixing oil, each of which must be used under favorable circumstances.

In dense mixes, a thin coat of hard bituminous material was recommended, and a still thicker and heavier one for porous mixes. Mr. Adler advocated the use of well-graded dry and clean aggregates and the proper amount of bitumen, so that it will not lubricate the mix. He believes that the trend is toward plant mixtures, where materials can be more properly graded.

Mr. Adler, in discussing the place of sand and gravel in bituminous mixtures, stressed the importance of the particular types for which it is best adapted. Angularity, surface texture, the mineral composition and coatability all have their places, but the first is important only in the open type mixture, as already noted. The use of hydrated lime or pulverized limestone was suggested as an aid to coatability. He said that silica has a stronger preference for water than for bitumen and that limestone will sometimes behave similarly under certain conditions. In concluding, Mr. Adler said that further study and research was necessary, and that data compiled from laboratory studies and experience should be assembled and used in preparation of such products.

Dredging Methods

IRVING WARNER, vice-president and chief engineer, Warner Co., Philadelphia, Penn., in his paper, "Use of Dredging Methods for Excavating Sand and Gravel," told of experiences gained in using different types of excavating at the company's plants. He gave the reasons why ladder dredges were the most economical and efficient method of excavating at the Van Sciver plant and others of the company.

At one time the Warner Co. had had some experience with the use of a large dragline operating on the top of a wet pit, which was discarded, according to Mr. Warner, for the following reasons:

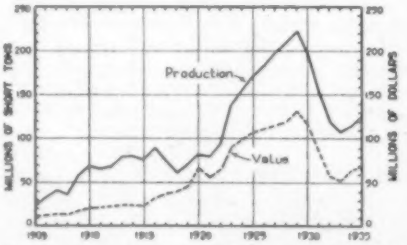
(1) The wet raw material was very punishing to the cars because of its great weight and fluidity.

(2) Accumulation of water at each point of loading puddled the soil and made track maintenance difficult.

(3) Relaying the track on each new cut was costly.

(4) No flexibility in moving to different points of the deposit to vary the raw material to approximate relative demands for sand or gravel.

Mr. Warner considers flexibility in excavating of utmost importance in his company's case, where different grades of concrete sand are required and there is heavy demand for all types of sand. He said that for a plant as large as the Van Sciver plant, with an hourly output of 840 tons, the ladder dredge is far cheaper to operate than other methods of excavation. Costs were figured as less than 2 cents per ton for labor, power and supplies; 1 cent for depreciation; ½ cent for transportation (about a mile), with a cost of less than 7¼ cents per ton delivered to the processing plant covering all expenses, including barge depreciation.



Trends in sand and gravel output, 1905-1935

These figures were compared with the old cost records of two pumping plants, operated for a short period of time in 1929. These pumps were 20-in. units, with an average pontoon distance of 1000 to 1200 ft. and a final discharge lift of 15 to 25 ft. Costs were as follows, in cents per ton:

	A	B
Labor	.74	1.83
Repairs—labor and material including the pontoon line	5.13	3.60
Supplies	.25	.04
Power	1.66	3.17
Depreciation	2.14	2.89
	9.92	11.53

The distance of the deposit from the processing plant was far too great to give any consideration to pump dredging, in the present plants. Plants of the Warner Co. were illustrated by slides.

Trends

H. HERBERT HUGHES, U. S. Bureau of Mines, showed a group of interesting slides to illustrate his paper, "Trends in the Sand and Gravel Industry." These charts showed production figures of sand and gravel plants, by size classes; the trends in output; gravel sold for paving, building and ballast by commercial and non-commercial operations; the distribution of employment in sand and aggregate plants; size classifications of plants and percentages of output produced by each size group; comparisons of sand and gravel output with crushed stone; and production indexes of sand and gravel and crushed stone compared with the Federal Reserve Board index of industrial production. Most of the charts were complete through 1935.

The peak production of sand and gravel, in 1929, was 222,571,905 tons.

Mr. Hughes pointed out that the trend is away from a volume consideration in building plants, and has turned toward plant design which will produce aggregates meeting rigid specifications at lower costs. Another trend, according to Mr. Hughes, is an increasing percentage of the total output by small plants. For example, in 1931, 32% of the total output was reported by plants producing less than 100,000 tons, and this same size group accounted for 42% of the total in 1935. In 1935, 36 plants or only 2% of all reporting accounted for 28% of the total, showing that large plants still account for an appreciable part of the output.

Quoting Mr. Hughes, "the rise of paving gravel production is due primarily to increased low-type road construction and a large part of the gravel is being used more extensively as coarse aggregate in concrete paving and to greater extent in bituminous mixes.

"Production of sand and gravel by local government agencies will probably continue. With increasing rigid specifications for aggregates, it appears that this noncommercial activity will be confined largely to unprepared material for use primarily in areas not served by commercial plants."

Safety Awards

At a luncheon meeting on December 9, the ROCK PRODUCTS annual safety contest trophies were presented to the Van Sciver plant of the Warner Co., Philadelphia, Penn.; and the American Aggregates Corp. plant at Oxford, Mich. Both of these plants are winners of the trophies in previous years. Also certificates of merit showing no lost time accidents were awarded to other producers.

Business and Federal Legislation

At this luncheon meeting, Congressman Walter Chandler assured producers that the objective of the next Congress was not to destroy the profit motive but to eliminate the gorging motive. He said that Congress recognized the part of business in providing employment, but by constitutional means intended to bring about a decent living for the laboring class.

Manufacturers' Exhibit

The list of manufacturers displaying equipment was published in the December issue of ROCK PRODUCTS. Improvements in detail were apparent in much of the equipment. The following important developments and new displays were noted:

Robins Conveying Belt Co., New York, N. Y.—A new horizontal screen with elliptical stroke designed for operation where head room is limited.

Caterpillar Tractor Co., Peoria, Ill.—Displayed its largest Diesel power unit, applicable as a power unit for dredge pumps, shovels and draglines.

John A. Roebling's Sons Co., Trenton, N. J.—Displayed a cross-section of the type cable, 36 in. diameter, used in construction of the George Washington bridge with 26,474 parallel wires in each cable.

American Manganese Steel Co., Chicago Heights, Ill.—Displayed the first equipment exhibited at a National Sand and Gravel Association convention. This wooden model of the 12-in. type H. Amsco pump was displayed at St. Louis in 1923.

Cross Engineering Co., Carbondale, Penn.—Displayed perforated metal machinery guards, either with slot or round openings. The metal can be cut, bent, formed or welded to make guards without angle iron frame, according to the manufacturer.

The Ludlow-Saylor Wire Co., St. Louis, Mo.—Displayed "Sta-Tru" woven wire screens, a long mesh woven wire screen, designed to eliminate stretching or splitting of the screens; and samples of an abrasion-resisting alloy recently developed.

W. S. Tyler Co., Cleveland, Ohio—Displayed a new 20x30-in. single-deck screen in addition to the double-deck screen, for use in making special fine sizes in ounce quantities.

Pettibone Mulliken Co., Chicago, Ill.—Conducted a contest at its booth to determine how many revolutions a 15-in. dredge pump impeller made in producing 264,680 tons of sand and gravel at the Chillicothe, Ill., plant of the McGrath Sand and Gravel Co. The estimated number of revolutions was calculated in advance as 19,829,632 r.p.m. A Gladstone traveling bag was awarded to R. M. Waters, Waters and McCrary Co., Columbus, Miss., for his prize-winning guess of 19,800,000 r.p.m. The guess of 25,000,000 r.p.m. by H. H. Hughes, Bureau of Mines, took the second prize of a traveling bag. Sam Chester, Waters and McCrary Co., guessed 13,500,000 r.p.m., for which he received a brief case as third prize winner.

Opening Gravel Pits

CONCHO SAND AND GRAVEL CO., Oklahoma City, Okla., is preparing to open its pits at Granite, Okla. Machinery is to be shipped in and production started to load out at least 300 cars of gravel from these pits in a month.

Christmas Bonuses

J. L. SHIELY CO., St. Paul, Minn., recently mailed out Christmas bonuses totaling $7000 to 75 employes. Ten per cent of a year's wages was paid to each employe who has been with the firm 10 years or more, with sums to other employes graduated according to length of employment.

His Clothes Caught

LOUISVILLE SAND AND GRAVEL CO., Louisville, Ky., suffered a fatal accident to an employe on December 14. He was brushing sand from the idlers of a belt conveyor carrying gravel from barges to the storage kins, when his clothes caught.

Dredge Sinks

"NEW MARTINSVILLE," a $25,000 sand and gravel dredge, sank in the Ohio river recently near Bellaire, Ohio, after a collision with the towboat *Steel City*. All members of the crew were rescued.

Shovel Accident

RIVERSIDE GRAVEL CO., Mandan, N. D., recently suffered a fatal accident to an employe when he was struck by a pulley on the dipper of a shovel. He had been steam shovel operator at the plant for 14 years; left his cab to make an inspection when the accident occurred.

New Trucks

PLAZA SAND AND STONE CORP., Yonkers, N. Y., has recently installed two 4-yd. Rex Motomix trucks.

Fire Damage

GREENVILLE SAND AND GRAVEL CO., Greenville, Miss., recently suffered slight damage by fire in the workshop and laboratory, caused by an exploding oil stove.

Foreclosure

CALLAHAN SAND AND GRAVEL CO., Earlville, Ohio, bank and equipment, according to recent reports, is to be sold at foreclosure in lieu of payment of a judgment of $83,328.77.

Increases Stock

TERRE HAUTE GRAVEL CO., Terre Haute, Ind., has increased its capital stock to 2000 shares of $100 par value.

Fatal Accident

MATERIAL SERVICE CORP., Lockport, Ill., suffered a fatal accident to an employe when a gravel slide 60 ft. underground buried him as he was working on a carloading hopper (feeding a belt conveyor).

Plant Addition

STASO MILLING CO., Poultney, Vt., is reported to have recently installed additional equipment for the production of colored slate roofing granules.

To Build Pyrophyllite Plant

TENNESSEE MINERAL PRODUCTS CORP., Spruce Pine, N. C., recently acquired Carolina Pyrophyllite at Staley, N. C., and is planning to erect a mill at or near the mines to grind the raw material. For some time, pyrophyllite has been shipped from the mines for grinding in the Spruce Pine, N. C., mill. According to reports, construction of the plant is to start shortly for completion in the spring.

Recent Quotations on Rock Products Securities

Stock	Date	Bid	Asked	Dividends
Allentown P. C., com.[50]	12-31-36	8½	10	
Allentown P. C., pfd.[50]	12-31-36	9	10½	
Alpha P. C., com.	12-31-36	31	actual sale	.25(qu.) Dec. 21
American Aggregates, 1st mtg. 3/6's, 1943, new bonds[48]	12-17-36	50	..	
American Aggregates, 6's, 1943, old[50]	12-17-36	50	..	
American Aggregates, com.[50]	12-17-36	2	3	
American Aggregates, pfd.[50]	12-17-36	6	..	
Arundel Corp., com.	12-31-36	17¾	17⅞	.25(qu.) Jan. 2
Bessemer L. & C., cert. of dep., 1947[46]	12-17-36	93	95	
Bessemer L. & C., com.[50]	12-31-36	9¼	9¾	
Bessemer L. & C., pfd.[50]	12-31-36	40	..	
Bessemer L. & C., 1st 6½'s, 1947[46]	12-17-36	90	..	
Boston S. & G., com.[37]	12-17-36	1½	2½	
Boston S. & G. 7% pfd.[37]	12-17-36	10	13	
Boston S. & G., 7's, 1939[37]	12-17-36	75	..	
Calaveras Cement, com.[40]	12-14-36	7½	8¼	
Calaveras Cement, 7% pfd.[40]	12-14-36	100	..	4.00(ac.) Dec. 19
California Art Tile, A[9]	12-15-36	19	19¾	
California Art Tile, B[9]	12-15-36	3½	4¼	
Canada Cement, com.[42]	12-21-36	13	13⅛	
Canada Cement, pfd.[42]	12-21-36	99½	101	
Canada Cement, 5½'s, 1947[42]	Called			
Canada Cement, 4⅛'s, 1951[42]	12-21-36	103⅜	104½	
Canada Crushed Stone, 6½'s, 1944[42]	12-21-36	95	..	
Consol. Cement, 1st 6's, 1950[50]	12-21-36	96	97½	
Consol. Cement, A[50]	12-21-36	9	9½	
Consol. Okla. S. & G., 6½'s, 1948[42]	12-21-36	18	..	
Consol. Rock Products, units[50]	12-31-36	⅛	⅝	
Consumers Rock & Gravel, 1st mtg. 6½'s, 1948[50]	12-31-36	35	36	
Coosa P. C., 1st 6's[37]	12-31-36	42	..	
Coplay Cement Mfg.[50]	12-31-36	..	1⅝	
Coplay Cement Mfg., 6's, 1941[50]	12-31-36	90½	..	
Cumberland P. C., 7's, 1937[50]	12-31-36	100	101	
Cumberland P. C., pfd[50]	12-31-36	45	50	
Dewey P. C., com[50]	12-31-36	56	..	
Dolese & Shepard	12-28-36	37	40	
Federal P. C., 6½'s, 1941[50]	12-31-36	56	..	
Fla. P. C., units[50]	12-31-36	36	38	
Fla. P. C., 6½'s, 1937[46]	12-17-36	100½	101½	
Giant P. C., com.[50]	12-21-36	4⅝	5⅛	
Giant P. C., pfd.[50]	12-21-36	24½	28	
Gyp., Lime & Alabastine, 5½'s, 1948[50]	12-31-36	14¼	actual sale	
Gyp., Lime & Alabastine, Ltd.	12-31-36	102½	103¼	
Hawkeye P. C., cap[50]	12-31-36	32	38	
Hercules Cement, com.[50]	12-31-36	37½	..	
Hercules Cement, pfd.[50]	12-31-36	98½	..	
Hermitage Cement, com.[50]	12-31-36	18	19	
Hermitage Cement, pfd.[50]	12-31-36	110	115	
Ideal Cement, com.[50]	12-21-36	90	92	1.00 Dec. 21 3.25(ex.) Dec. 21
International Cement, conv. deb. 4's, 1945	12-31-36	160⅝	actual sale	
Kelley Island L. & T.	12-31-36	27	27	.25(qu.) Dec. 15 .25(ex.) Dec. 15
Ky. Cons. Stone, 6½'s, 1938[50]	12-31-36	15	17	
Ky. Cons. Stone, com.[50]	12-31-36	3¾	5	
Ky. Cons. Stone, 1st mtg., 6½'s[46]	12-17-36	20	23	
Ky. Rock Asphalt, 6½'s, 1936[50]	12-31-36	30	..	
Lawrence P. C., com.	(dividend resumed)			2.00 Dec. 19
Lawrence P. C., 5½'s, 1942[50]	12-21-36	100	102	
Lehigh P. C., com.	12-31-36	39½	actual sale	1.00(sp.) Dec. 21
Lehigh P. C., 4% pfd.[50]	12-31-36	150	170	1.00(qu.) Jan. 2
Lone Star Cement, com.	12-31-36	56¾	57⅞	.50(qu.) Dec. 21 .75(ex.) Dec. 21
Louisville Cement	12-30-36	130	..	
Lyman-Richey, 1st 6's, 1935[50]	12-21-36	56	..	
Marbelite Corp., com (cement pts.)[40]	12-14-36	35c	65c	
Marbelite Corp., pfd.[40]	12-14-36	4	5	
Marblehead Lime, 7's, 1944[34]	12-18-36	96	98	
Marquette Cement, com.[50]	12-21-36	42	..	
Marquette Cement, pfd.[50]	12-21-36	97	..	
Material Service Corp.[50]	12-31-36	13½	14¾	
McCrady-Rodgers, com.[50]	12-31-36	..	13	
McCrady-Rodgers, 7% pfd.[50]	12-31-36	25	..	
Medusa P. C., com.	12-31-36	38	41	
Medusa P. C., pfd.[50]	12-31-36	75	..	
Michigan L. and C., com[50]	12-31-36	40	..	
Minnesota Mining & Mfg. Co.	12-31-36	41	42⅝	.25(qu.) Dec. 22 .40(ex.) Dec. 22
Missouri P. C.	12-31-36	17½	18	
Monarch Cement, com.[50]	12-31-36	98½	..	
Monolith P. C., com.[9]	12-15-36	2½	3¼	
Monolith P. C., 8% pfd.[9]	12-15-36	6⅞	7½	.50(ac.) Dec. 15
Monolith, P. C., units[9]	12-15-36	16	18¼	
Monolith P. C., 1st mtg.[9]	12-15-36	104	105	
Monolith Portland Midwest, pfd.[9]	12-15-36	2	2¾	
National Gypsum, A, com.[50]	12-31-36	67	..	stk div. 2.50 Dec. 21
National Gypsum, 1st pfd.[50]	12-31-36	104½	..	1.75 Dec. 21
National Gypsum, 2nd pfd.[50]	12-31-36	14½	15½	.25 Dec. 22
National L. & S., 6½'s, 1941[50]	12-31-36	90	..	
Nazareth Cement, Com.[50]	12-31-36	9	10	
Nazareth Cement, pfd.[50]	12-31-36	76	..	
Newaygo P. C., 7% cum. pfd.[50]	12-31-36	92	..	
New England Lime, units[34]	12-18-36	13	15	
N. Y. Trap Rock, 1st 6's, 1946	12-31-36	91	93½	
N. Y. Trap Rock, 6's, stamped, 1946	12-31-36	94	96½	
N. Y. Trap Rock, 7% pfc.[60]	12-17-36	80	83	6.00stk Jan. 1
North Amer. Cement, 1st 6½'s, 1953[50]	12-21-36	54	56F	
North Amer. Cement, 6½'s, 1943[50]	12-21-36	100	101	
North Amer. Cement, 6½'s, 1940[50]	12-21-36	78	..	
North Amer. Cement, "A" pfd.	12-31-36	8	10	
North American Cement "B"[50]	12-31-36	9	..	
North Shore Mat. 1st 6's[50]	12-31-36	57	..	
Northwestern P. C., units[9]	12-15-36	55	60	
Northwestern States P. C.[50]	12-31-36	24½	..	
Ohio River S. & G., com.[9]	12-31-36	1	..	
Ohio River S. & G., 1st pfd.[50]	12-31-36	78	..	
Ohio River S. & G., 2nd pfd.[50]	12-31-36	4	..	
Ohio River S. & G., 6's[46]	12-17-36	10	12	
Oregon P. C. com.[50]	12-31-36	4	5	
Oregon P. C., pfd.[50]	12-31-36	96	..	
Oregon P. C., conv. pfd.[50]	12-31-36	50	..	
Pacific Coast Agg., new com.[40]	12-14-36	3½	3⅝	
Pacific P. C., com.[40]	12-14-36	4⅝	5¼	
Pacific P. C., pfd.[40]	12-14-36	49½	52	
Peerless Cement, com[50]	12-21-36	7¼	7⅝	
Penn.-Dixie Cement, com	12-31-36	7⅝	7¾	
Penn.-Dixie Cement, pfd. A	12-31-36	62	66	
Penn.-Dixie Cement, 6's, A, 1941	12-31-36	99¾	99¾	
Penn. Glass Sand Corp., com.[50]	12-31-36	24½	..	.50(in.) Dec. 15
Penn. Glass Sand Corp., 1st Mtg. 4½'s, 1960	12-31-36	105⅛	105¼	
Petoskey P. C., 6's, 1935-38[46]	12-17-36	105	..	
Petoskey P. C., 6's, 1941[46]	12-17-36	105	..	
Republic P. C., 6's, 1943[50]	12-21-36	102½	..	
Riverside Cement, A[9]	12-15-36	15	15½	
Riverside Cement, B[9]	12-15-36	1	1½	
Riverside Cement, pfd.[9]	12-15-36	102	105	
Santa Cruz P. C., pfd.[9]	12-15-36	47	50	
Schumacher Wallboard, com.[9]	12-15-36	4½	5	
Schumacher Wallboard, pfd.[9]	12-15-36	18	19	
Signal Mt. P. C., units[60]	12-21-36	6.	10	
Southwestern P. C., units[46]	12-14-36	150	..	
Standard Pav. & Mat. (Can.), com.[42]	12-21-36	5⅛	5¾	
Standard Pav. & Mat., pfd.[42]	12-21-36	38	40	
Superior P. C., A[40]	12-14-36	44	50	3.02½(ac.) Dec. 21 .27½(mo.) Dec. 21
Superior P. C., B[40]	12-14-36	15⅛	16¼	
Trinity P. C., units[50]	12-31-36	47	..	
U. S. Gypsum, com.	12-31-36	122	122½	.50(qu.) Dec. 31 1.25(ex.) Dec. 24
U. S. Gypsum, pfd.	12-31-36	166	167	1.75(qu.) Jan. 2
Volunteer P. C., 1st 7's, 1942[50]	12-31-36	..	97	
Vulcanite P. C., com.[50]	12-31-36	3¾	..	
Vulcanite P. C., 7½'s, 1943[50]	12-31-36	90	..	
Wabash P. C.[50]	12-31-36	9½	11	
Warner Co., ww, 1st 6's, 1944[50]	12-31-36	84½	85½	
Warner Co., com.[50]	12-31-36	8½	9½	
Warner Co., pfd.[50]	12-31-36	21	23	
Whitehall Cement Mfg. com.[50]	12-31-36	85	..	
Whitehall Cement Mfg., pfd.[50]	12-31-36	50	..	
Wisconsin L & C., 1st 7's, 1940[50]	12-31-36	88	..	
Wolverine P. C., com.[50]	12-31-36	4½	5½	
Yosemite P. C., A com.[40]	12-14-36	6¼	6¾	

Quotations by [9]A. E. White Co., San Francisco, Calif. [34]The Securities Co. of Milwaukee, Inc., Milwaukee, Wis. [37]Wise, Hobbs & Beaver, Inc., Boston. [40]Martin Judge, Jr. and Co., San Francisco, Calif. [42]Nesbitt, Thomson & Co., Toronto. [46]First National Bank of Chicago, Chicago, Ill. [48]Hewitt, Ladin & Co., New York, N. Y. [50]Rogers & Tracy, Inc., Chicago, Ill.

F = flat.

Recent Dividends Announced

Arundel Corp., com. (quar.)	$0.25	Jan. 2, 1937
Calaveras Cement, pfd. (accum.)	4.00	Dec. 19, 1936
Ideal Cement Co., com.	1.00	Dec. 21, 1936
Extra	3.25	Dec. 21, 1936
Lawrence P. C., resumed	2.00	Dec. 19, 1936
Lehigh P. C., com. spec.	1.00	Dec. 21, 1936
Pfd. quar.	1.00	Jan. 2, 1937
Minn. Min. & Mfg. (quar.)	.25	Dec. 22, 1936
(extra)	.40	Dec. 22, 1936
Superior P. C., A (ac.)	3.02½	Dec. 21, 1936
(mo.)	.27½	Dec. 21, 1933
Yosemite P. C., 4% non-cumul. pfd. (init.)	.40	Dec. 29, 1936

Extensive Plant Improvements

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., recently started a general improvement program at its Mason City, Iowa plant that will provide more work for employes than in previous shutdown periods for several years. The reconditioning work will apply to all departments of the plant.

Dewey Gives Bonuses

DEWEY PORTLAND CEMENT CO., Dewey, Okla., plant paid year-end bonuses of $75 each to 300 employes and about $50,000 was paid out to 700 employes at the Davenport, Iowa, plant of the company.

Contracts Let—Prices Bid

THE FRANCE STONE CO., Toledo, Ohio, was recently awarded contract for 65,000 tons of stone at $42,250 and the TOLEDO CONCRETE PIPE CO. was given the contract for 24,480 ft. of 12 to 33-in. pipe at $15,634, both to be used to improve the Transcontinental Airport purchased by the city.

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AMBRIDGE, PENN., awarded contracts for the Olive Lane paving project to five local bidders. Each of the five submitted identical bids of $9.00 per cu. yd. for ready mixed concrete for this job.

Enlarge Cement Storage

CENTURY CEMENT CORP., Rosendale, N. Y., recently broke ground for two additional storage silos of 6000 bbl. capacity each. It is reported that new grinding machinery will be installed when the silos are completed.

Silica Brick Price Increase

THE REFRACTORIES INDUSTRY recently announced an average increase of 10% in prices to customers, to be effective January 1. This is the first price increase made by the industry generally since before January, 1934, even though three wage increases averaging 10% each were granted since.

Sand-Lime Brick Production and Shipments

THE following data are compiled from reports received direct from producers of sand-lime brick located in various parts of the United States. They may be considered representative of the industry.

Ten active sand-lime brick plants reported for the month of November, this number being the same as that reporting for the month of October, statistics for which were published in December.

Average Prices for November

Shipping Point	Plant Price	Delivered Price
Pontiac, Mich.	$11.00	$13.50
Detroit, Mich.	....	13.50
Syracuse, N. Y.	14.00	16.00-20.00
Saginaw, Mich.	10.50	....
Sioux Falls, S. D.	....	13.00
Madison, Wis.	11.00	13.00

Statistics for October and November

	October†	November*
Production	3,814,145	3,395,575
Shipments (rail)	283,500	55,000
Shipments (truck)	3,372,086	3,152,607
Stocks on hand	1,969,637	1,736,649
Unfilled orders	2,660,000	1,800,000

† Ten plants reporting; incomplete, two not reporting unfilled orders.

* Ten plants reporting; incomplete, three not reporting unfilled orders.

Sand Lime Block

A Michigan producer of sand-lime block reported production of 53,000 units, of which 52,403 were shipped by truck. The average price f.o.b. job was 12c for the 8-in. block and 16c for the 12-in. block.

Reorganization

ACME BRICK CO., Milwaukee, Wis., sand-lime brick manufacturer, announces a reorganization. At a stockholders' meeting recently the following were elected officers of the company: A. C. Marggraff, president; Robert Jacobi, vice-president; Eric Erdman, treasurer; and J. E. Rasmussen, secretary. The company reports that the Barton, Wis., plant is now in full operation.

Slag Wool

EL PASO ROCK FLEECE CORP., El Paso, Tex., a new concern, was to start manufacturing "Rock Fleece," an insulating product for boilers and fireproof buildings, before January 1. The plant is being constructed under supervision of S. A. Brandon, vice-president of the company. Raw material will be obtained in the form of slag from the El Paso Smelting Co. smelter. Molten slag at 2800 to 3000 deg. F. will be blown through a series of steam jets to strike a target and fall on the floor. The product will then be sacked and graded in the laboratory, followed by pressing and packing as the finished product. On a 24-hour schedule in three shifts, a minimum daily production of 48 tons is expected.



Chas. L. Hogan, chairman of the board, P.C.A.

Portland Cement Association Annual Meeting

ABOUT 300 executives of member companies attended the convention of the Portland Cement Association, December 14, 15 and 16, in Chicago. Edward J. Mehren was re-elected president and other officers were chosen as follows: Charles L. Hogan, New York, chairman of the board; S. W. Storey, Chicago, treasurer; Frank L. Page, Chicago, assistant treasurer, and W. M. Kinney, Chicago, general manager.

Prepared committee reports took up a day, most important of which was that on safety headed by J. B. John, Cleveland. F. R. McMillan told of types of cements in Europe, observations made on a 75-day tour. Louis A. Dahl, research chemist, spoke on cement qualities and W. Loving, hydraulic engineer, had a paper, "Highlights from the Concrete Pipe Industry."

In an afternoon session, A. J. Boase emphasized architectural concrete, in telling of observations of European concrete buildings. W. G. Kaiser, manager, cement products bureau, in a paper, "Progress in Concrete House Promotion," told of the development and increase in numbers of concrete houses being built.

Mr. Mehren, president, predicted that industrial America was at the beginning of a long upward movement, with a new high peak to be reached. He estimated that cement shipments would reach a total of 110,000,000 bbl. for 1936, an increase of 46½% over 1935. The consensus of opinion at the meeting indicated that a substantial increase was also expected for 1937, but not as great an increase as in 1936.

TRAFFIC and TRANSPORTATION

Proposed Rate Changes

THE FOLLOWING are the latest proposed changes in freight rates up to and including the week of December 26:

New England

40541. To correct Item 2732, Sup. 26, Agent Van Ummersen's I. C. C. No. 260, naming rates on **limestone**, C. L.,, from Canaan, Conn., etc., by changing Glenwood, W. Va. (B. & O. Station Index No. 5830), to read, Glenwood, Penn. (B. & O. Station Index No. 8625).

40575. **Sand and gravel**, minimum weight 50 net tons, except that when cars of lower capacity are furnished for carriers' convenience, apply Note 1. Kendal Green to Haverhill, Mass. Proposed—60c net ton. Reason—To enable the B. & M. R. R. to receive a haul on this material.

40586. **Ground silica rock** (See Note 3), provided that orders will not be accepted for closed and open-top cars of less marked capacity than 60,000 and 80,000 lb., respectively, from Keene, N. H., to Boston, Chester, Mass., Hartford, Conn., Lynn, Mass., $1.93 net ton; Mt. Vernon, N. Y., $2.48 net ton; New Bedford, Mass., $2.20 net ton; Springfield, Waltham, Mass., $1.82 net ton; Worcester, Mass., $1.71 net ton, and Valley Falls, R. I., $1.93 net ton.

40594. To cancel rate of 24½c on **filter sand or gravel** from No. Wilbraham, Mass., to Hawkesbury, Ont., as published under Item 85, B. & A. R. R. I. C. C. 9333, and apply, in lieu therof, 6th class rate of 35c, published in B. & A. I. C. C. 8878.

Trunk

35360. **Stone chips or granules** (roofing granules), C. L., minimum weight 50,000 lb., from Advance and Gladhill, Penn., and from Texas and Cockeysville, Md., to Park Place, Penn.; rate $2.77 per 2000 lb.

35362. **Crushed stone and crushed stone screenings**, in open top cars, C. L., (See Note 3), from Hillsville, Shaw Junction and Walford, Va., to various points in West Virginia, rates of $1.50 and $2 per net ton.

35363. To cancel rate of 17c per 100 lb. on **limestone**, from various stations in New York and vicinity to points in New York and Pennsylvania published in Item 50 of Erie Railroad Tariff I. C. C. No. 19317.

35364. To cancel rates on **slag**, C. L., from Catasauqua, Penn., to various points in Trunk Line and New England territories published in L. & N. E. R. R. Tariffs I. C. C. A-6133, A-6134 and A-6288. Reason—Operations discontinued at Catasauqua.

35366. **Ground limestone**, C. L., minimum weight 60,000 lb. from Munns, N. Y., to Centre Village and Oneonta, N. Y., $1.35, Windsor and East Windsor, N. Y., $1.45.

35367. To cancel rates on **rock, ganister**, not ground, in open top cars, C. L., minimum weight 40,000 lb., from Berkeley Springs, W. Va., and Moore's Mills, Penn., to Riverton, Penn., published in B. & O. R. R. I. C. C. 22737, and P. R. R. I. C. C. 1387.

35374. **Quarry waste**, consisting of crushed or broken stone, grout and rip rap, C. L., (See Note 3), from Sidney and South Unadilla, N. Y., to various points in New York and New Jersey, rates ranging from $1.10 to $2.10 per net ton.

35375. **Sand**, naturally bonded molding, in open top or box car equipment, C. L., (See Note 3), from Catasauqua, Penn., to Manheim, Penn., $1.20 per net ton.

35382. **Limestone**, crude, fluxing, foundry, and furnace, in open top cars, C. L., (See Note 3), from Ashcom, Penn., to Riddlesburg, Penn., 63c per gross ton.

35387. To cancel rates on **sand**, from points in New York and Pennsylvania on the N. Y. C. R. R. to various points in Trunk Line, New England and Canadian Freight Association territories.

35398. **Crushed stone and screenings**, per Item 5 of P. R. R. Tariff I. C. C. 1493, C. L., (See Note 3), from Steelton, Penn., to Mechanicville, Md., and Forrest Hall, Md., $1.80 per net ton.

35399. **Barytes**, crude, lumped or jigged, C. L., (See Note 2), from Candler and Lone Jack, Va., to Aquashicola, Palmerton and Palmerton East, Penn., $4.80 per gross ton, in lieu of present sixth class rate.

35407. **Sand** (other than naturally bonded molding, ground or pulverized) and **gravel**, in open top cars, without tarpaulin covering, C. L., (See Note 2), from Morrisville, Penn., to Lakewood and So. Lakewood, N. J., $1.10 per net ton, in lieu of present rate $1.60 per net ton.

35408. **Broken stone**, C. L., (See Note 2), from Monocacy, Penn., to Denton, Md., $1.60 per net ton, in lieu of present 6th class rate 18c per 100 lb.

M-3583. **Sand** (other than ground or pulverized or natural bonded molding), in open top cars without tarpaulin covering, and **sand** (other than ground or pulverized or natural bonded molding), in closed cars or in open top cars with tarpaulin covering, C. L., (See Note 2), from Blossvale, McConnellsville and Humaston, N. Y., to points in Pennsylvania and New Jersey, rates ranging from $1.70 to $2.40 per net ton.

Central

48914. To establish on (a) **sand**, naturally bonded, moulding, in all kinds of equipment, C. L.; sand (except naturally bonded moulding; ground or pulverized sand), in closed equipment, carloads; (b) sand, ground or pulverized, in all kinds of equipment, carloads; and (c) sand (except naturally bonded moulding; ground or pulverized sand) in open top equipment, carloads; from Sugar Creek, Penn., to points in Connecticut, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia and Wisconsin, rates the same as now published from Utica, Penn., in Erie R. R. Tariffs 104-J and 510-I.

48936. To establish on **limestone**, agricultural, unburnt, in bulk, in open top cars, C. L., from Ridgeville, Ind., to Cincinnati, Ohio, 95c per net ton, via P. R. R.

48952. To establish rates on **sand**, as described in 48914, from Patoka, Ind., to points in Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, New York, Ohio, Pennsylvania, West Virginia and Wisconsin, by placing Patoka, Ind., in a separate group and on its own mileage.

48974. To establish on **stone**, crushed, **stone screenings** in bulk, and **agricultural limestone**, unburnt, in bulk, in open top cars, C. L., from Middlepoint, Ohio, to Hicksville, Ohio, 100c per net ton.

48989. To establish on **roofing granules** (silica), C. L., minimum weight 60,000 lb., from Brittain and Copley, Ohio, to Buffalo, N. Y., 210c; Chicago, Chicago Heights, Ill., 250c; Cincinnati, Ohio, Detroit, Mich., 185c; East St. Louis, Ill., 335c; Franklin (Warren Co.), Ohio, 185c; Joliet, Ill., 250c; Lockland, Ohio, 185c; Lockport, N. Y., 210c; Lowell, Ind., Lockport, Ill., 250c; Madison, Ill., 335c; Niagara Falls, N. Tonawanda, N. Y., 210c, and Vandalia, Ill., 335c, per net ton.

49001. To establish on **breakwater stone**, C. L., from the Bedford-Bloomington, Ind. district to Marquette, Mich., 325c per net ton.

49038. To establish on **roofing granules**, C. L., min. wt. 80,000 lb. from Phalanx, Ohio, to New Orleans, Gretna, La., 531c; Mobile, Ala., 517c, and Port Wentworth, Ga., 534c per net ton.

49043. To revise the rates, P. R. R. Tariff 117-C, on **gravel** and **sand**, except industrial, in open top cars, C. L., from County Spur, Mich., to destinations in Michigan, as follows:

To	Cancel Group B	Prop. Group C
Sheppard	150	130
Richland Jct.	77	66
Cassopolis	98	87
Battle Creek	92	78
Detroit	147	122
Grand Haven	117	102
Grand Beach	122	102
Parma	112	97
Grand Junction	97	82
South Haven	102	87
Spring Harbor	122	102
Charlotte	132	112
White Pigeon	98	82
Adrian	137	117
Portage	77	66
Allegan	87	74
Lansing	122	102
Sturgis	84	70
Shelbyville	70	58
Muskegon	110	90
Cadillac	130	110
Watervliet	115	100
Sparta	107	92
White Cloud	127	107
Greenville	122	102

49044. To establish on **slag** in open top cars, C. L., from South Chicago, Ill., to Alexandria, Ind., 125c per net ton.

49054. To establish on **slag**, C. L., (See Note 1). (Rates in cents per gross ton): From Middletown, Ohio, to Hamilton, Ohio: Proposed—25. Via B. & O. R. R.

49055. To establish on **slag**, in open top cars, C. L., from Benwood and Wheeling, W. Va., to destinations on the Monongahela Ry., viz.: To Hite, Hilderbrand, 100c; Granville, Randall, Cassville, Lemley, W. Va., 110c; Brave, 120c; Ifield Jct., Browns Run Branch, 110c; Lardin, Edenborn, Gates, Brownsville, Old Home Works, Simpson, 120c; Nemacolin, Clarksville, Waynesburg, 130c; Ralph, Brier Hill, Low Phos and Shamrock Works, Penn., 120c per net ton.

49056. To establish on **slag**, in open top cars, C. L., from Benwood and Wheeling, W. Va., to stations on the B. & O. R. R. in West Virginia, rates in cents per net ton as shown:

Carrolton, 120; Century Mine No. 2, 120; Century, 120; Clements, 120; Byron, 110; Hope Natural Gas Co., 110; Jane Lew, 110.

Route: B. & R. R. via Ohio River Transfer. Davisville, 100; Petroleum, 110; Cairo, 110; Lamberton, 120; Pennsboro, 120; Central, 120.

Route: B. & O. via Lumberport and Short Line Junction. West Union, 110; Salem, 110; Wilsonburg, 100.

Route: B. & O. R. R. Via Lumberport, Haywood & Clarksburg, W. Va. Bridgeport, 110; Webster, 110.

Route: B. & O. R. R. Via Grafton: Cove Run, 110; Consolidation No. 37, 120; Humphreys Mine, 110.

Route: B. & O. R. R. Via Federal Junction and Grafton. Thornton, 110; Holmes, 120.

49129. To establish on **crushed stone**, in open top cars, C. L., from Marion, Ohio, to Freeport, Ohio, 125c per net ton.

49132. To establish on **sand** (except naturally bonded moulding; ground or pulverized sand), in closed equipment, C. L., (See Note 3), but not for closed and open top cars of less marked capacity than 60,000 and 80,000 lb., respectively, from Muskegon, Mich., to Ypsilanti, Mich., 135c per net ton.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Southern

13223. **Stone,** rubble or crushed, in straight or mixed C. L.; **gravel,** C. L.; **sand,** N. O. S., in packages or in bulk, C. L.; (See Note 3). Establish 70c net ton from Richmond and South Richmond, Va., to Carson, Va., intrastate.

13247. **Bituminous rock,** crushed or ground, C. L., as per Item 200, S. F. T. B. Tariff 196-C, and **asphaltic sandstone,** C. L., as per Item 200, S. F. T. B. Tariff 286. Revise rates from Cherokee, Ala., and Kentucky producing points to S. F. A. territory so as to reflect changes (increases) predicated on current distances via the shortest routes made necessary as result of abandonment of certain portions of lines over which rates were originally figured.

13274. **Slag,** basic, ground open-hearth, in packages, C. L., minimum 40,000 lb. Establish 12½% of first class from Ensley, Ala., to Vicksburg, Miss., and points in S. W. F. B. territory in S. W. L. Tariff 154-C.

13276. **Dry ground mica** and **mica schist.** Cancel all rates from Black Mountain R. R. and Clinchfield, Ry. stations to Ensley, Ala., Mobile, Ala., New Orleans, La., and Oakland City, Ga., except as shown below:

(b) Revise rates on **dry ground mica,** C. L., as follows::

From	†	‡	To @	*	‖
Asheville, N. C.....	28	27	34	38	23
Biltmore, N. C.....	28	27	34	38	23
Balsam, N. C.....	29	27	34	38	23
Franklin, N. C.....	34	24	31	35	21½
Johnson City, Tenn...	26	26	34	38	24
Kings Creek, S. C.....	31	26	33	38	21
Penland, N. C.....	28	28	35	39	24
Spruce, Pine, N. C....	28	28	35	39	24

† Cincinnati, Ohio.
‡ Ensley, Ala.
@ Mobile, Ala.
* New Orleans, La.
‖ Oakland City, Ga.

13298. **Asphaltic limestone,** broken, crushed or ground, containing not more than 5% artificially added asphalt, C. L., (See Note 3). Establish rates from Margerum, Ala., to points in Southern Missouri on and south of the St. L.-S. F. Ry., St. Louis, Mo., to Kansas City, Mo., not including St. Louis or Kansas City, made with relation to rates from Dougherty and other Oklahoma shipping points.

13316. **Fullers earth,** in bags or sacks, or in bulk in box cars (Item 25, A. C. L. R. R. I. C. C. B-2858), C. L., minimum 50,000 lb. Establish 300c net ton, from Ochlocknee, Ga., to Panama City, Fla., for export to all foreign countries (including Panama Canal Zone, Cuba, Hawaiian Islands, Philippine Islands and Porto Rico).

13321. **Fullers earth,** crude, as from the pit or air-dried, in packages or in bulk, C. L., minimum 70,000 lb. Establish Class 12 or 12% of 1st class from Attapulgus, Ga., Jamieson, Midway and Quincy, Fla., to points in the Southwest and Kansas-Missouri Territory named in S. W. L. Tariff 154-C.

13323. Establish rates from Mobile, Ala., on **fullers earth,,** C. L., minimum 70,000 lb. to Ohio and Mississippi River crossings, I. F. A., C. F. A., W. T. L., Eastern and New England points on the basis of 16% of first class except that rates to Buffalo-Pittsburgh Territory points are on basis of average of 16% of first class.

13334. **Limestone,** crushed, ground or pulverized, not burnt, C. L., minimum 60,000 lb. Establish following rates in cents per net ton from Harrodsburg, Ky., to: Bellaire, Toronto, Ohio, Detroit, Mich., Clarksburg, Wheeling, Weston, W. Va., 340; Cambridge, Newark, Ohio, Gas City, Kokomo, Marion, Ind., Parkersburg, W. Va., 300; Columbus, Lancaster, Ohio, Dunkirk, Elwood, Hartford City, Muncie, Terre Haute, Ind., 280; Niles, Ohio, Fairmount, Morgantown, W. Va., Monaca, Penn., 360; Indianapolis, Ind., 260; Mishawaka, South Bend, Ind., 320; Huntington, W. Va., 240; Olean, N. Y., 400; Corning, N. Y., 460.

13337. **Roofing granules,** C. L., Cancel present rates from Minpro and Spruce Pine, N. C., to Baltimore, Md., and South Bound Brook, N. J., published in S. F. T. B. Tariff 627-A. (Twelfth class rates to apply.)

13352. **Feldspar,** C. L., minimum 60,000 lb., as per Item 630, Note "B," Exceptions 15 to Southern Classification. Establish 212c net ton, from West Jefferson, N. C., to Toecane, N. C.

13362. **Chert,** C. L. Provide for the participation of the Nor. Sou. R. R., in standard line joint rates published in scale 2, page 443, S. F. T. B. Tariff 388-A.

13403. **Fullers earth,** C. L., as per section 1, Item 615, S. W. L. Tariff 173-H, and descriptions A, B and C, Item 35, S. A. L. Ry. Fullers Earth Tariff 3. Establish rates from Superior, Fla., to points in western New York, western Pennsylvania, West Virginia, C. F. A., I. F. A., S. W. F. B. and W. T. L. C. territories, made 50c net ton higher than rates from Quincy, Fla

13421. **Fullers earth,** crude, as from the pit or air-dried, in packages or in bulk, C. L., min. 70,000 lb. Established Class 12 or 12% of 1st Class, from Mobile, Ala., to points in Southwestern and Kansas-Missouri Territories.

13445. **Stone,** broken or crushed, in straight or mixed C. L. (See Note 3.) Establish 30c net ton (not subject emergency charges) from Dolcito, Ala., to Birmingham, Ala. (Truck competitive-contract carrier). Expires June 30, 1937.

13447. **Sand,** C. L. (See Note 3.) Establish 45c net ton (not subject emergency charges), from Doke and Wellington, Ala., to Anniston, Ala. (Intrastate). Truck competitive. Expires June 30, 1937.

13456. **Concrete mix,** consisting of cement and sand or of cement, sand and gravel, dry (the amount of cement in the mixture not to exceed, in any case, 25%), in paper sacks, C. L., minimum 50,000 lb. Establish 11c cwt. from Cincinnati, Ohio, to Lexington, Ky. Truck competitive. Expires June 30, 1937.

Western

D-41-188. **Crude alumina sand,** C. L., minimum weight 80,000 lb., from Marysvale, Utah, to Detroit, Mich., proposed, $12.50; Baltimore, Md., $14.50; Noranda, Quebec, $13.50; Ducktown, Tenn., $11; Isabella, Tenn. (R. R. name Copper Hill), $11. Rates in cents per ton of 2000 lb.

D-41-189. **Stone,** crushed, broken, etc., as described in Item 1401 of Agent Pope's Tariff 66-G, I. C. C. 1887, from Brookport, Cairo, Gale, Joppa, Metropolis, Mounds, Thebes, Ill., Evansville, Ind., when originating at points in southeastern territory, to points taking Kansas City, Mo., Omaha, Neb., Atchison, Kan., and St. Joseph, Mo., rates as named in Pope's Tariff 66-G. Proposed, same rate as applicable to Kansas City, Mo., Atchison, Kan., St. Joseph, Mo., which is 14c, and Omaha, Neb., which is 16½c per 100 lb. These rates are also applicable to intermediate points.

D-41-190. **Stone,** crushed, C. L., (See Note 3), but not less than 40,000 lb., from Dell Rapids and Sioux Falls, S. D., to Sargent, Neb. Proposed, 286c per net ton.

Southwestern

9829. To establish stop-over privilege to unload partly shipments of **silica,** crushed or ground, at points in the Southwest.

9843. Establish rate of 23c per 100 lb. on **stone,** crushed, ground or pulverized, (See Note 2), from Webb City, Mo., to Carbondale, Colo.

9867. **Chatt sand.** To establish rate of $4 per net ton, (See Note 2), to alternate with present rate of $3.53 per ton of 2000 lb., subject to minimum weight of 100,000 lb., from Southwest Missouri points to Terre Haute, Ind.

9878. To provide for application of scale in Item 800, Basis 30 (joint line), S. W. L. Tariff 162-K, on **oyster shell screenings** and **ground limestone,** straight carloads between points in Arkansas, Louisiana (west of Mississippi River), Oklahoma, Texas, Kansas and Missouri, on the one hand, and points in W. T. L. and I. F. A. territories, on the other. The scale to be extended beyond 1200 miles at rate of 10c per net ton for each 50 miles.

9897. **Crushed stone,** Missouri stations to Colorado, Wyoming and New Mexico groups. To establish rate of 18½c per 100 lb. on **crushed stone, ground limestone** and **chatts,** carload. (See Note 3), but not less than 40,000 lb. from Southwest Missouri origins to points of destination located in Groups A, B, C and D in W. T. L. Tariff 111-I, I. C. C. A.-2601.

Illinois

8351. **Crushed stone,** C. L., as described in I. C. R. R. Tariff 13321-H, I. C. C. A-10814, from Anna, Ill., to Mo.-Ill. R. R. stations, viz.: Florida Mine, Kempside, Nashville, Huegely, Shirley, Selmaville, etc., Ill. Proposed, 90c net ton.

8310-C. **Crushed stone,** C. L., usual minimum weight from Fairmount, Ill., to various Illinois points. To replace class rates with following:

To Ryan, 63; Danville, 63; Champaign, 70; Bement, 76; Decatur, 80; Sullivan, 84.

Transcontinental

18934. To include **mineral wool** (rock or slag wool), in forms or shapes other than solid flat blocks or solid flat sheets, in Section 2, Item 1620 series, Tariffs 1 and 4.

19017. **Granite, marble, jasper, onyx** or **slate,** C. L., W. B.: Proposal to publish proportional rate of 67½c per 100 lb., minimum weight 60,000 lb., from Group D, under Item 5085, Tariff 4, rate to apply only on shipments originating at points taking Groups A, B, C, C-1, K, K-1, L, L-1 or M rates from which no through rates are provided in item.

Joint Conference

S. F. A. 3374 (S. F. A. Submittal 10384). Establish on **stone, marble or granite** (except terrazzo aggregates; bituminous rock, asphaltic, limestone, bituminous asphalt rock, phosphate rock, soapstone or gypsum), crushed, granulated, ground or pulverized, including stone dust, in bulk or in bags in box cars, C. L., (See Note 3), from points in S. F. A. to points in Official Territory, rates based 12½% of first class, except that to points in T. L. A. and N. E. F. A. territories, rates are to be based 12½% of Q plan rates published in Agent W. S. Curlett's Tariff 82-A.

I. C. C. Decisions

The interstate commerce commission recently authorized railroads to reduce their rates on carload shipments of **limestone** from Omaha, Louisville and Weeping Water, Neb., to destinations in northern Kansas.

16342. By division 2. Carriers authorized in No. 12591 to establish rates, **cement,** from Birmingham, North Birmingham, Phoenixville and Boyles, Ala., to points in the Carolinas, without regard to the long-and-short-haul part of section 4, over their routes, the lowest rate that may be constructed over any route on the basis prescribed in Southern Cement Rates, 132 I. C. C. 427, and supplemental reports. The relief enables them to meet over their longer routes the rates of the shorter routes.

27341. C. A. Wagner Construction Co. vs. C. M. St. P. & P. et al. By division 4. Rate, sand, Hawarden, Ia., to Brandon, S. D., between August 23 and September 1, 1934, unreasonable to the extent it exceeded 70c. Defendants authorized to waive collection of outstanding undercharges.

27297. Dewey Portland Cement Co. vs. C. M. St. P. & P. et al. By division 3. Dismissed. Rates, **cement,** Linwood, Ia., to Wind Lake Road, Wis., between April 21, 1934, and July 5, 1935, not shown to have been unreasonable.

Phosphate Project

STANDARD WHOLESALE PHOSPHATE CO., Baltimore, Md., is planning for a plant in the Curtis Bay area.

• Installations Manufacturers Take Pride In •



A Multiclone dust collecting system, installed in 1936 at the Wide aggregate plant of the Metropolitan Water District of southern California, by the Western Precipitation Co., is one of few such applications of dust collectors to open, outside aggregate plants. New employers' liability laws may require them generally in dry plants.



Sauerman 2-cu. yd. Crescent scraper installation excavating hard-packed material 20 ft. under water at plant of Helena Sand and Gravel Co., Helena, Mont. There is about 5c per cu. yd. gold in this gravel.

• Installations Manufacturers Take Pride In •

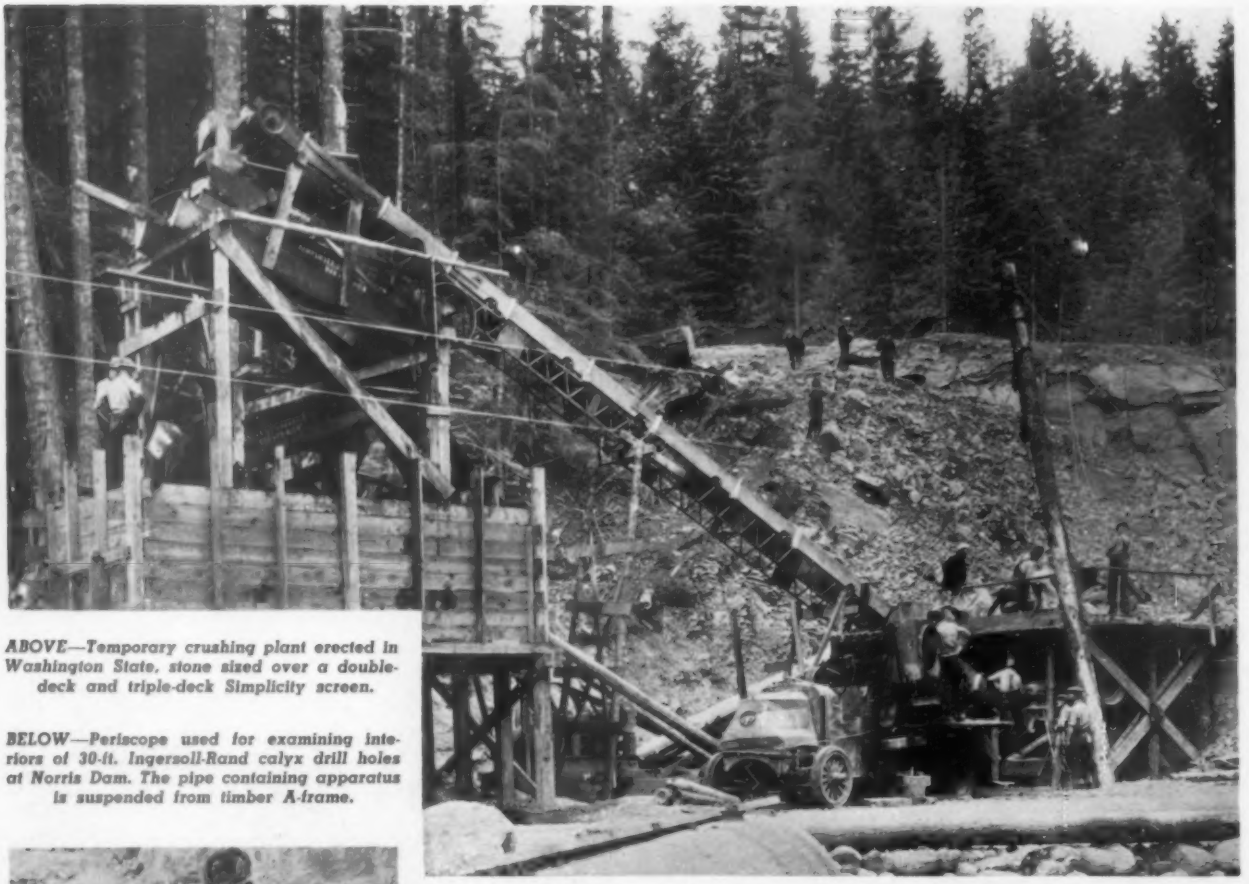


Action photograph of an "Iowa Super Tandem Straight Line Plant" in operation. This is a new style portable plant embodying a new type roller-bearing crusher as a primary, the roller-bearing roll crusher as the secondary crusher and the Iowa Symons vibrator screen as the screening unit. The plant is completely roller bearing throughout; mounted on either solid or pneumatic tires; driven by gas or Diesel power, and is equipped with either a straight or swivel type conveyor.



This Diesel-powered compressor, by Worthington, illustrates how the uses of portable compressors are widely extended by Diesel power, which makes cost of operation comparable to that of central plants.

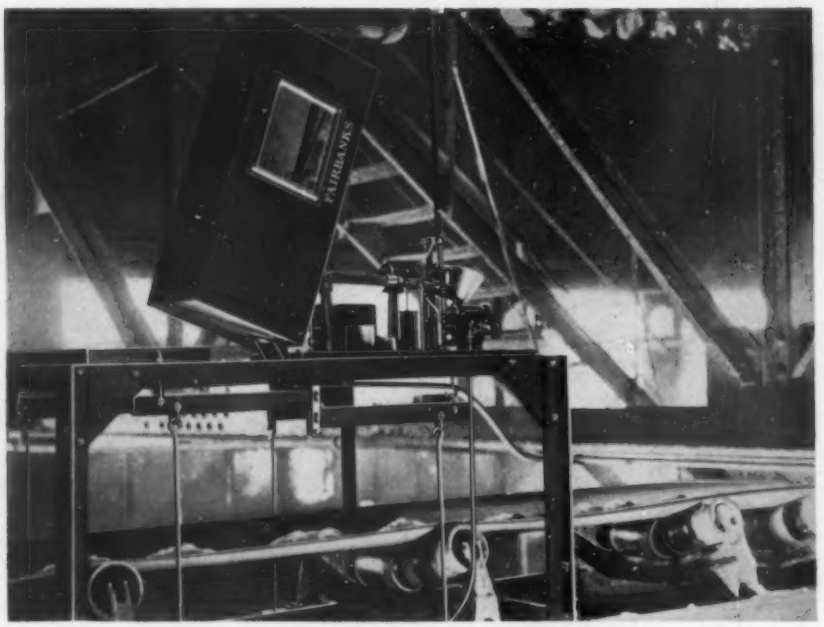
• Installations Manufacturers Take Pride In •



ABOVE—Temporary crushing plant erected in Washington State, stone sized over a double-deck and triple-deck Simplicity screen.

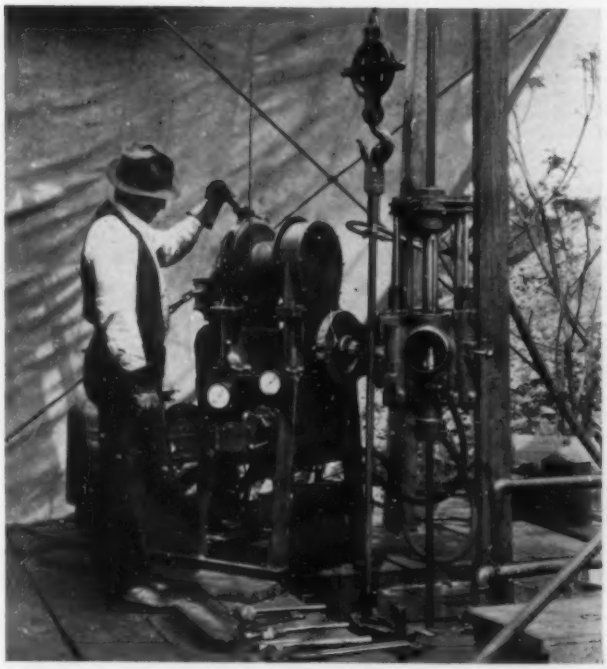
BELOW—Periscope used for examining interiors of 30-ft. Ingersoll-Rand calyx drill holes at Norris Dam. The pipe containing apparatus is suspended from timber A-frame.



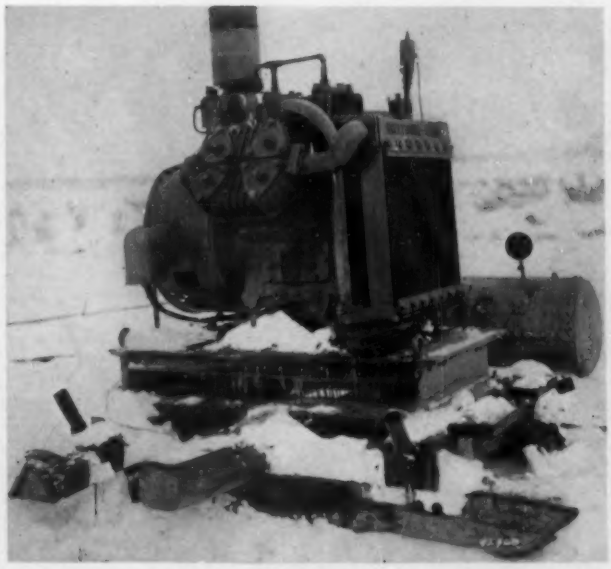


This automatic Fairbanks, Morse and Co. conveying scale is used by the Dewey Portland Cement Co. at its Davenport, Iowa, plant to weigh wet sludge as it comes from the filters.

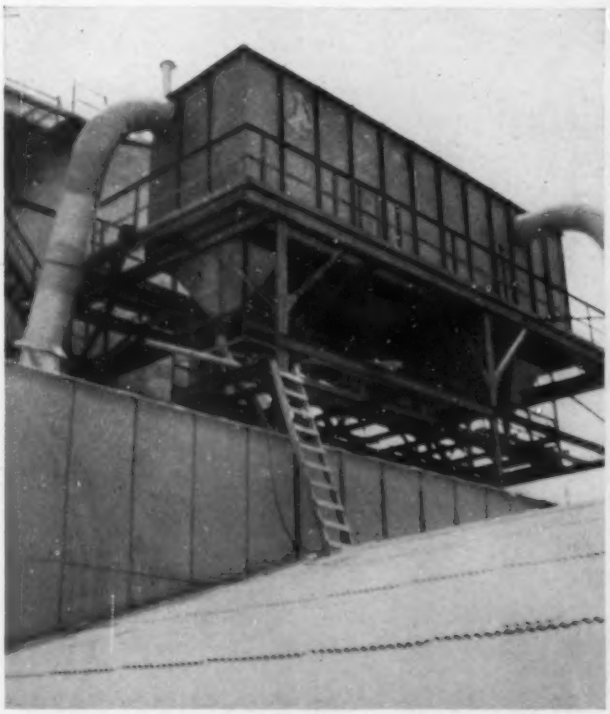
• Installations Manufacturers Take Pride In •



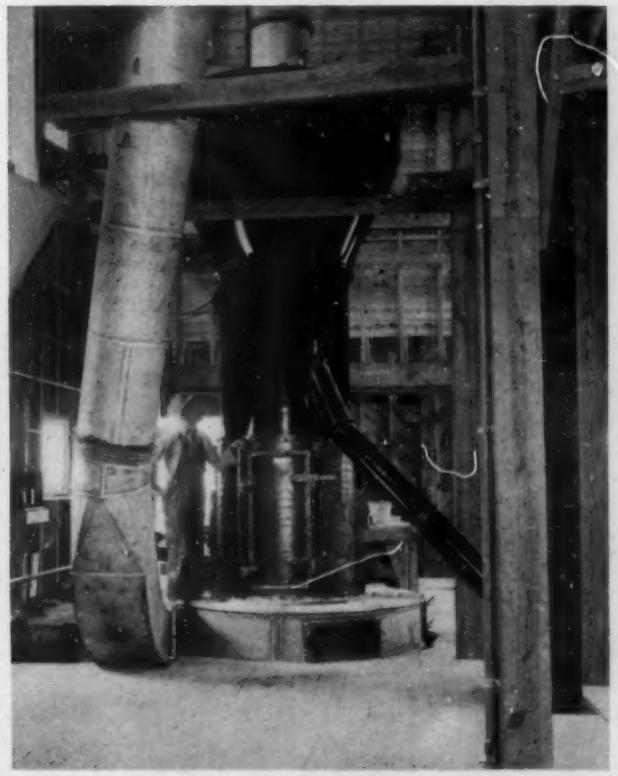
Ingersoll-Rand "Coroc" diamond core drill with head swung back and hoist in operation to withdraw tools.



This portable electric-motor compressor, by Ingersoll-Rand, is in winter operation at the plant of Inland Lime and Stone Co., Portland, Mich.



Rock dust is collected in this large Sly dust filter in operation at the Consolidated Stone and Sand Co. plant, New Jersey—it is typical of what new employers' liability laws are requiring.



Talc is ground as fine as 99% through a 325-mesh screen in this Williams standard size roller mill with air separator, at Southern Talc Co.'s new plant, Chatsworth, Ga. Granular talc passes through the 10-in. pipe on the right, to be sized over a 4 by 10-ft. Williams enclosed screen.

• Installations Manufacturers Take Pride In •



An application of a Bucyrus-Erie bulldozer to heavy quarry work



This Model 60 Haiss loader is shown loading dense, cemented rock sand direct from stockpile to trucks at a speed of 3 cu. yd. per min. at one of the Hudson River plants of the New York Trap Rock Co. The Dorr classifiers below the bins make graded sand from screenings.

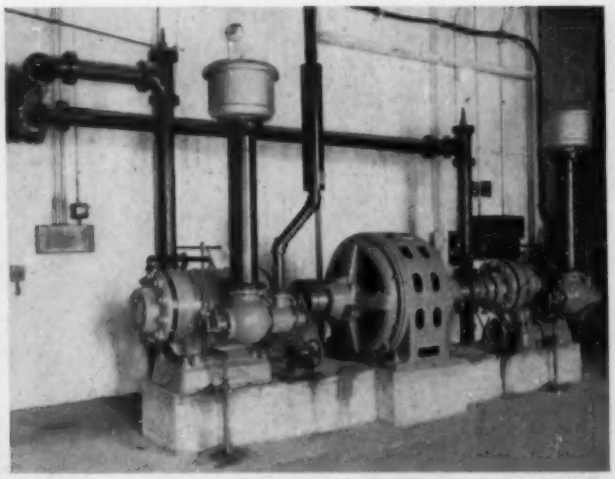
• Installations Manufacturers Take Pride In •



The three photographs above show the face to be shot, the actual blasting and the result when shot down, using Hercules explosives. These pictures are of the quarry of Lambertville Trap Rock Co., Lambertville, N. J. The main charge of 9075 lb. of Hercules 60% low-freezing gelatin, loaded in four well drill holes, was supplemented by 500 lb. of extra low-freezing gelatin in 40 toe holes. About 18,000 cu. yd. of rock were broken by the shot.

Bonus Awarded

M. J. GROVE LIME Co., Lime Kiln, Md., recently distributed $5,000 among 150 employes on a seniority basis. W. J. Grove, president, said that business the past year was the best since the company's incorporation in 1899.



Two Fuller, rotary, single-stage, air compressors at the plant of the Nazareth Portland Cement Co., Nazareth, Penn., each to serve a separate Fuller-Kinyon conveying system. Air-Maze air filters are used on the air intake side of each compressor.



This Model ML 30-ton Plymouth gasoline locomotive is one of seven operated by Wagner Quarries, Sandusky, Ohio.



The installation of Cummins Diesel engines in this Ward LaFrance truck and others has cut haulage costs considerably for the Worden Sand and Gravel Co., Bedford Hills, N. Y., and has made possible a side-line haulage business in slack seasons. These 6-cylinder, 125-hp. engines operate with a fuel saving of about two-thirds over the company's gasoline trucks.

• Installations Manufacturers Take Pride In •

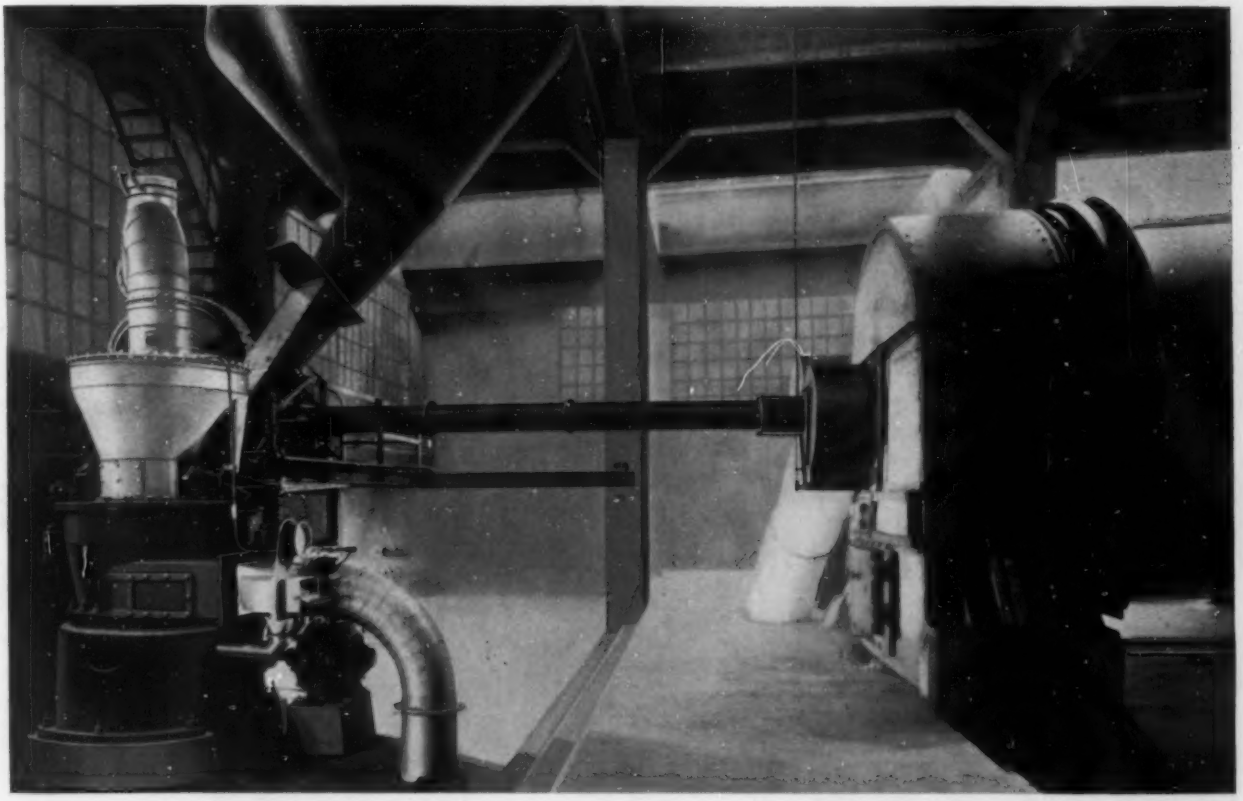


Austin-Western No. 125 portable gravel washing plant owned by John Yerrington, Michigan



Truck trailer body by Easton Car and Construction Co. for heavy-duty hauling

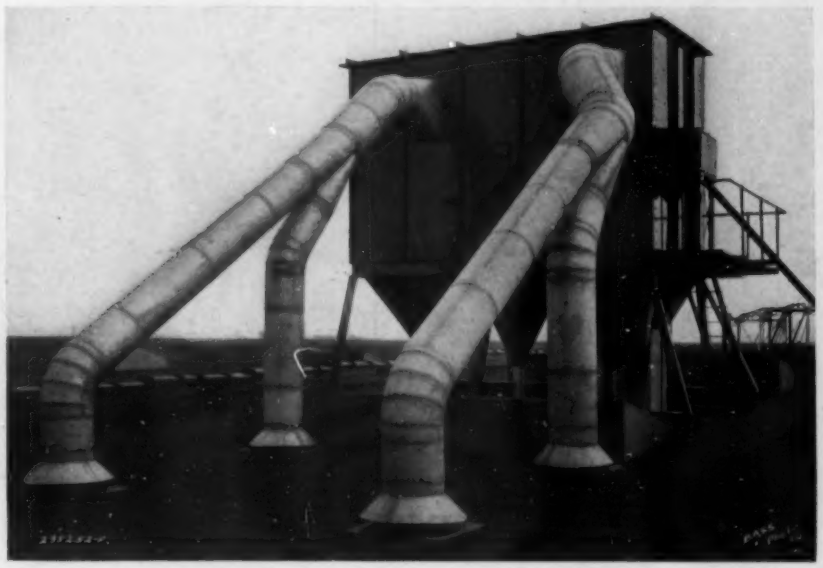
• Installations Manufacturers Take Pride In •



A rotary cement kiln being fired directly with pulverized coal from a Raymond Bowl mill unit, which dries and pulverizes in one operation



Hoisting 25-ton blocks of granite at the gang saws, using a newly-developed sling of Macwhyte braided multiple-part wire rope



A Sly dust filter, with dust piping, handling fine silica dust

• Installations Manufacturers Take Pride In •



Harnischfeger Corp. modernizes a cement plant quarry with latest type P & H electric-powered shovels. Model 1200 Ward Leonard control

• Installations Manufacturers Take Pride In •



Partial view of the Krause, Ill., plant of the Columbia Quarry Co., St. Louis, Mo. Diesel engines and alternating generators were installed at this plant recently to furnish 25 cycle current for all plant motors. An 8-cyl. 525-hp. National-Superior engine drives a 438-kv.a Allis-Chalmers a.c. electric generator and a 6-cyl. 400-hp. Diesel drives a 333-kv.a generator. Complete details of the new power plant were published in the October, 1936, issue of Rock Products.



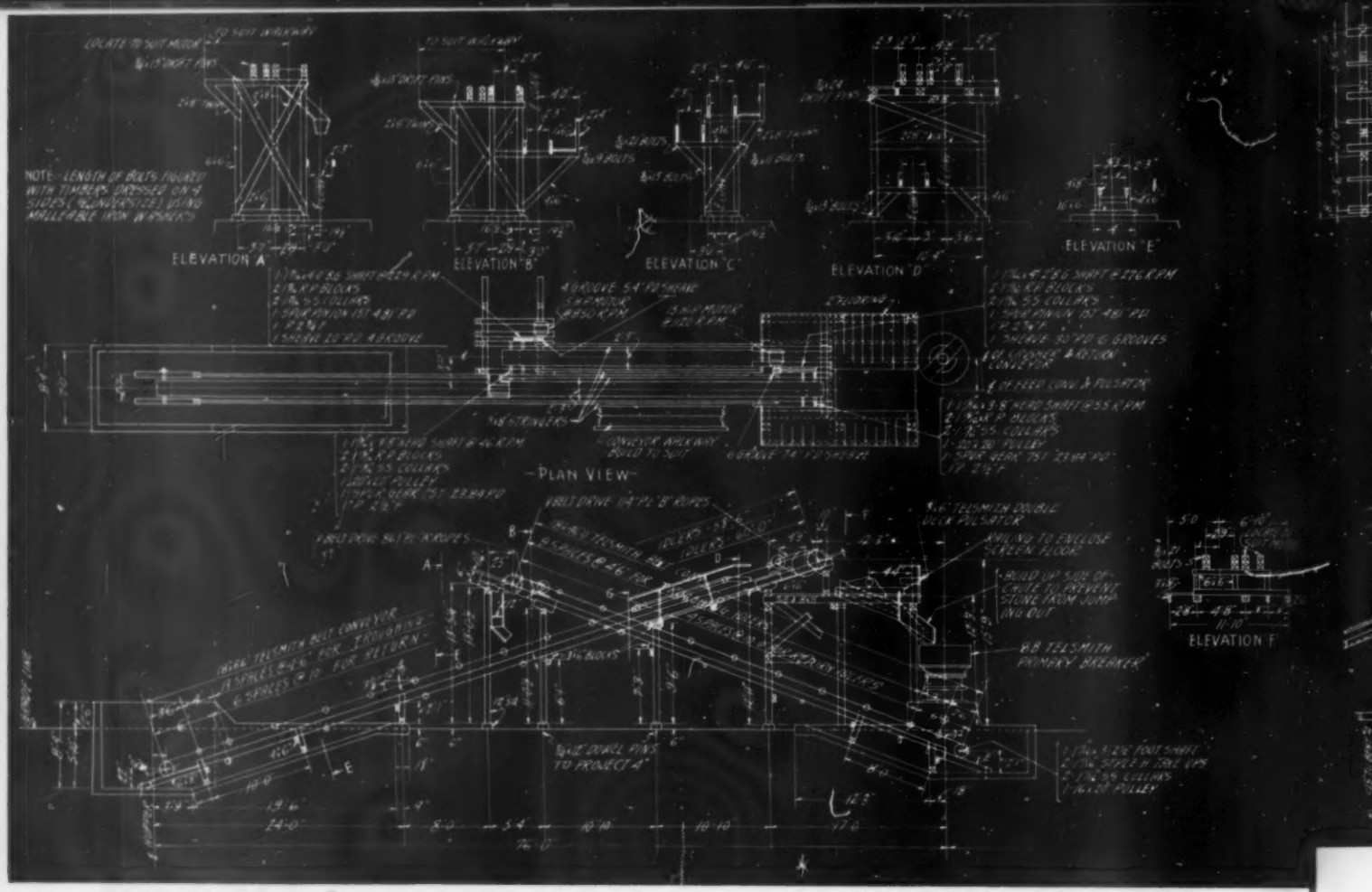
The new power plant and garage building of the Krause, Ill., plant of the Columbia Quarry Co., constructed, appropriately enough, of natural stone blocks taken from the quarry and laid by company labor. Adjacent to the power house is the cooling tower. After water-softening treatment, water is forced through the engine cooling systems and returned to pass through a triple set of coils at the water tower.



View showing Diesel engine air intake and exhaust lines leaving power plant building at Krause, Ill., plant. On the right can be seen the Curtis air compressor and air storage tanks to build up starting pressure for the Diesel engines. Note the interior walls of dimension block construction. Insurance rates were reduced to $130 annually by this type of construction.

Marquette to Rehabilitate

MARQUETTE CEMENT MANUFACTURING Co., Chicago, Ill., recently announced a rehabilitation program to involve considerable expenditure and expected to consume most of the winter period before completion, at its Oglesby, Ill., plant. The improvements are to include the revamping of kilns now in use, the resumption of operation of a kiln idle since 1932, revamping of clinker grinding equipment and many other changes. The kilns will be shut down one at a time for a thorough going over; new plate sections will be introduced, enlarged burning sections will be added in some cases; special new heat resisting linings will be added throughout. The spare kiln is to be started up while improvements are being made. This kiln has been equipped with a direct-fired coal mill. Six coal mills were installed at Oglesby in 1935.

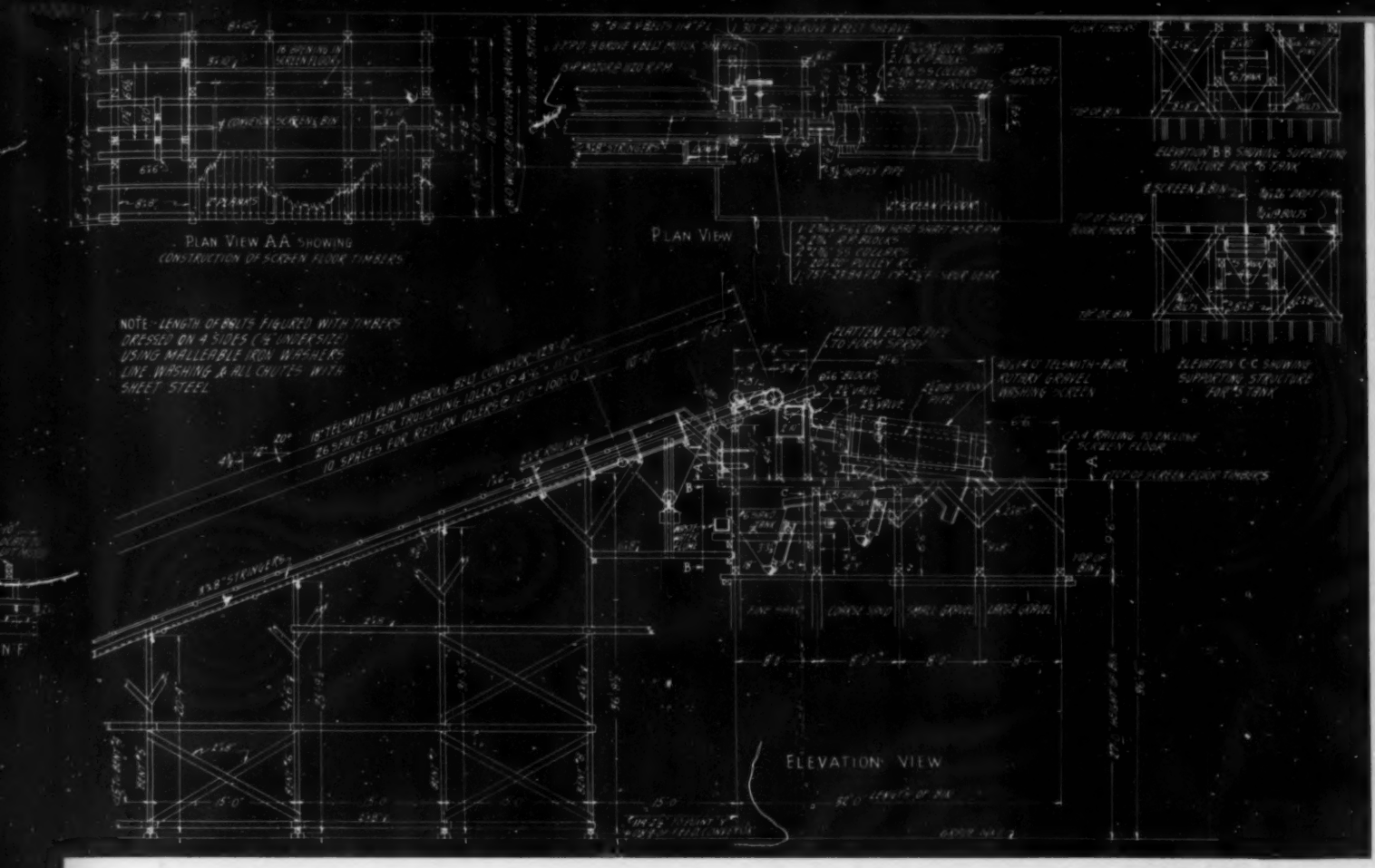


Smith Engineering Works, Milwaukee, Wis., designed this plant for a typical Far West sand and gravel operation. The primary crusher is a Telsmith 8B. Since the plant was completed as illustrated in the above blueprint, a secondary or reduction crusher, a No. 32 Telsmith, has been added alongside the primary crusher, which discharges to the same conveyor. All essential details are shown above

TYPICAL 1936 "SUBURBAN" SAND AND GRAVEL PLANT
PIONEER FUEL AND BRICK CO., BUTTE, MONTANA

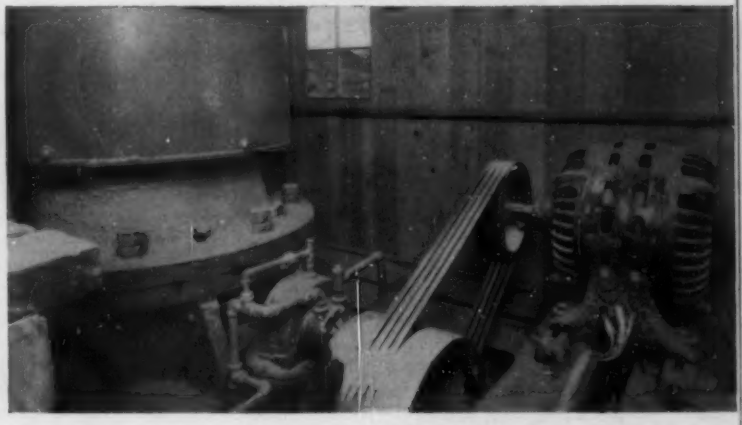
The plant is so constructed that a scraper bucket excavator can be used, or trucks loaded by shovel or dragline. Timber construction was used throughout. Everything is housed, for this is in a severe climate





Usual screening practice is reversed in this plant. A vibrating screen is used for scalping ahead of the primary crusher, and a rotary screen for sizing—and scrubbing. Water is expensive in this part of the country and the washing is done on the finished product







These details, with the aid of the blueprints are self-explanatory. Modern practice emphasizes neatness



Crushed Stone Industry Preparing For Weighty Convention

Papers and Talks Designed to Provide Liberal as Well as Technical Education

THE twentieth annual convention of the National Crushed Stone Association will take place at the Netherland Plaza Hotel, Cincinnati, Ohio, January 18, 19 and 20. No effort has been spared to assure a program universal in its appeal, replete with topics of timely interest and value and presented by speakers of outstanding ability in their respective fields, says J. R. Boyd, administrative director.

On Monday morning, January 18, with remarks appropriate to the occasion, H. E. Rodes, president of the association, will call the convention to order. Following his opening remarks, the question, "How is Business?", always of absorbing interest, will receive attention. Detailed reports by regions covering business conditions in 1936 and the outlook for 1937 will be presented by the regional vice-presidents.

Business Survey

Following this survey of business conditions, the executive staff will make its annual accounting to the membership through reports submitted by A. T. Goldbeck, engineering director, and J. R. Boyd, administrative director. Each will review the important developments in his department during the current year and propose for consideration recommendations for the conduct of association affairs during the coming year. Ample opportunity will be allowed following the presentation of these reports for a full and frank discussion of association activities and policies. This session will close with the appointment of committees.

All present at the convention will assemble for the "greeting luncheon" after the close of the morning session. Arrangements are under way to obtain for this event a speaker of recognized ability.

The discussion on Monday afternoon will open with a symposium on "Stone Sand." The exceptional interest stimulated in this product as a result of the publication of Engineering Bulletin No. 10 demands important consideration of the subject on the convention program. It will be treated from the point of view of the user as well as the producer. The former angle will be discussed in a paper entitled, "The Use of Stone Sand in Concrete Construction," presented by an outstanding highway engineer with a wide and comprehensive experience in the use of this product. There will then follow a general discussion on the "Methods of Preparation of Stone Sand," led by three producers who, on the basis of years of experience gained in the practical production of stone sand, will indicate the most perplexing difficulties encountered and how such difficulties have been overcome.

"What's on the Worker's Mind Today" is a subject which should command the sympathetic attention of every employer in the industry, particularly when presented by Whiting Williams, internationally known adviser and consultant on industrial relations. His message is of outstanding interest and significance.

The Monday afternoon session will be concluded with a presentation of the sound-slide film, "Men and Machines," one of a series of five now included in the National Industrial Council's library of sound-slide films.

An informal reception by the Manufacturers' Division for all in attendance at the convention will be held at 6:30 on Monday evening. The reception will be followed immediately by a buffet supper, after which the formal opening of the Manufacturers' Division Exposition will take place.

The first event on the program Tuesday morning, January 19, will be the presentation of awards to the winners in the National Crushed Stone Association Safety Contest, by a representative of the U. S. Bureau of Mines, under whose supervision the contest is conducted. The Columbia Quarry Co., as winner, will receive *The Explosives Engineer Award.*

M. J. Gormley, executive assistant to the president of the Association of American Railroads will discuss the railways' problems. Mr. Gormley is well known to the members of the industry in his former capacity as chairman of the Car Service Division of the American Railway Association.

The remainder of the Tuesday morning session will be devoted to a broad discussion of the Silicosis Problem, which is assuming increased importance in the crushed stone industry.

The broad aspects of the problem will be outlined by Dr. R. R. Sayers, medical officer in charge of industrial hygiene, U. S. Public Health Service, Washington, D. C., who is one of the outstanding specialists in this field in the country. A phase of the problem too frequently overlooked will be handled by Theodore C. Waters, Stockbridge and Waters, Baltimore, Md., in a talk on "The Legal Aspects of the Silicosis Problem."

At one o'clock on Tuesday there will be held the Manufacturers' Division luncheon to which all in attendance at the convention are most cordially invited. Remarks appropriate to the occasion will be made by C. S. Huntington, chairman of the Manufacturers' Division, and by H. E. Rodes, president of the Association. Following the luncheon the entire afternoon will be left open for the specific purpose of permitting those in attendance at the convention ample opportunity for a studious and leisurely inspection of the Exposition.

The opening paper on Wednesday morning, the concluding day of the convention, will be presented by E. F. Kelley, chief of the division of tests of the U. S. Bureau of Public Roads, on the subject, "Significant Developments in Highway Investigations."

Following Mr. Kelley we shall hear C. L. McKesson, vice-president of the American Bitumuls Co., San Francisco, Calif., discuss the results of a series of investigations recently conducted by him concerning a new development in the use of crushed stone in a paper entitled, "Stabilizing Quarry Fines for Base Construction."

The remainder of the morning session will be devoted to a subject of particular interest to the producers of agricultural limestone.

Discussion of Laws

During the last session of Congress, it will be recalled, a new Federal-aid bill was passed broadening to a marked degree the road mileage of the country eligible for Federal assistance. This legislation, as well as other factors of recent development, will exert a significant influence upon the construction of highways in the years to come. W. C. Markham, executive secretary of the American Association of State Highway Officials, will discuss "Future Policies in State and Federal Road Building."

In the field of Federal legislation, two enactments of the last session of Congress, the Robinson-Patman Price Discrimination Act and the Walsh-Healey Government Contracts Act, demand attention, as they seem destined to exert an important influence upon the marketing practices of the industry. Discussion will be opened with a paper presented by John C. Gall, associate counsel, National Association of Manufacturers. The meeting will then be

thrown open for questions from the floor pertaining to the Robinson-Patman Act, the Walsh-Healey Act, and such other Federal statutes as may need clarification.

The remainder of the Wednesday afternoon session will be devoted to the annual business meeting of the Association, including the reports of convention committees and the election of officers.

The annual banquet is on Wednesday evening. Plans are now in course of preparation to make this affair one of the most interesting and pleasurable in the history of the Association.

Exhibitors

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

Atlas Powder Co., Wilmington, Del.

Bucyrus-Erie Co., South Milwaukee, Wis.

Cross Engineering Co., Carbondale, Penn.

E. I. duPont de Nemours and Co., Wilmington, Del.

Easton Car and Construction Co., Easton, Penn.

Frog, Switch and Manufacturing Co., Carlisle, Penn.

General Electric Co., Schenectady, N. Y.

Gruendler Crusher and Pulverizer Co., St. Louis, Mo.

Harnischfeger Corp., Milwaukee, Wis.

Hardinge Co., York, Penn.

Hendrick Manufacturing Co., Carbondale, Penn.

Hercules Powder Co., Wilmington, Del.

Jeffrey Manufacturing Co., Columbus, Ohio.

Kennedy-Van Saun Manufacturing and Engineering Corp., New York City.

Kensington Steel Co., Chicago, Ill.

Koehring Co., Milwaukee, Wis.

Lima Locomotive Works, Lima, Ohio.

Link-Belt Co., Chicago, Ill.

Marion Steam Shovel Co., Marion, Ohio.

National Safety Council, Chicago, Ill.

Nordberg Manufacturing Co., Milwaukee, Wis.

Northwest Engineering Co., Chicago, Ill.

Pioneer Gravel Equipment Manufacturing Co., Minneapolis, Minn.

Pit and Quarry, Chicago, Ill.

Robins Conveying Belt Co., New York, City.

ROCK PRODUCTS, Chicago, Ill.

Simplicity Engineering Co., Durant, Mich.

The Thew Shovel Co., Lorain, Ohio.

Traylor Engineering & Manufacturing Co., Allentown, Penn.

W. S. Tyler Co., Cleveland, Ohio.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Penn.

U. S. Bureau of Mines, Washington, D. C.

U. S. Bureau of Public Roads, Washington, D. C.

Honored

J. R. CALLANAN, vice-president, Callanan Road Improvement Co., South Bethlehem, N. Y., was recently elected president of the New York State Crushed Stone Association. Other officers are C. L. Buchholtz, Batavia, vice-president and H. E. Coleman, Leroy, secretary-treasurer.

To Open Plant

KANKAKEE STONE Co., Kankakee, Ill., is opening a new stone quarry near Kankakee and will crush a hard dolomite. The plant is being designed to produce 800 to 1000 tons per day in six sizes, including agricultural stone. Production is to begin March 15, 1937.

Wage Boost

INLAND LIME AND STONE Co., Manistique, Mich., recently announced a wage increase for all employes, a part of a general policy of the Inland Steel Co. Each job was to be revaluated and a suitable change in rate to be made. The lowest rate now paid to labor is advanced to 49 cents per hour.

A Warning!

DAMAGES of $15,000 were awarded, December 8, to S. Ragland for injuries sustained when a pile of limestone dust caved in on him at the Lillie Mae, Ky., plant of the Kentucky Consolidated Stone Co. Ragland, not an employe but a purchaser of screenings for resale, was loading a truck when a weather-hardened crust on top of the pile cracked and sent an avalanche of material down on him.

Construction Contract

A. S. WALLACE, Roseburg, Ore., was awarded a $37,584 contract recently by the state highway commission to supply crushed stone in stockpile on the Eagle Point-Crater Lake section of the Crater Lake highway.

New Company

INTERNATIONAL LIME CORP., a new concern is developing a limestone deposit on Nelson Island, 60 miles northwest of Vancouver, according to recent reports. The deposit is several hundred feet deep and is said to test 99.20% pure. New buildings have been erected, new trackage to the wharf built and equipment installations are contemplated for the near future, according to reports. G. C. Walker is president.

Receivership Ended

CARTHAGE MARBLE AND WHITE LIME Co., St. Louis, Mo., receivership was terminated by order of the Circuit Court, December 12, and the custodian of the company's securities was ordered to sell enough of the property to realize $100,000. This money is to be distributed to stockholders, to the receiver, for attorney fees, and for the payment of income taxes.

Absolved of Blame

R. J. FUNKHOUSER Co., Hagerstown, Md., was absolved of all blame by State Labor and Industry Department inspectors in connection with the deaths of seven men at its Delta, Penn., mine recently, in a blasting accident. No evidence was found that the owners had violated rules and regulations of the department.

Forbid Blasting

LOUISVILLE CRUSHED STONE Co., Louisville, Ky., was enjoined from blasting rock at its quarry in Camp Taylor in a recent ruling of the circuit court. The injunction was issued to property owners who testified that damage to foundations and broken windows resulted. The company contended that blasting was within its rights and that charges of explosive were used in moderate quantities. The injunction was suspended pending decision of the court of appeals.

Dissolution

WINTERSET LIMESTONE Co., Winterset, Iowa, was recently dissolved by mutual agreement of holders of outstanding stock, at a special meeting.

Large Blasting Order

CALLANAN ROAD IMPROVEMENT Co., South Bethlehem, N. Y., is putting its quarry experience to work on a government project, to relocate state road No. 5 through Little Falls, N. Y. The contract calls for blasting and removing several hundred thousand cubic yards of Adirondack gneiss and using it for fill. In addition, about 150,000 yd. of earth and gravel is to be laid as a subbase. About a year will be required for completion of the project.

Wage Increase

BLAIR LIME AND STONE Co., Martinsburg, W. Va., recently announced a wage increase of 5 cents per hour for about 200 quarry workers.

Fire Loss

THOMPSON-WEINMAN AND CO., INC., Cartersville, Ga., recently suffered damages of $100,000 by fire at its Cartersville plant. The fire started in a frame building used for the drying of ground barytes.

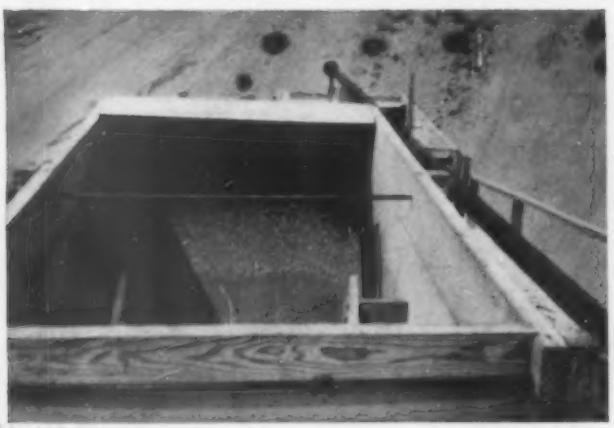
Pioneer Sand and Gravel Co. A 1936 Plant, Unusual



Large revolving shovel feeds hopper over belt conveyor



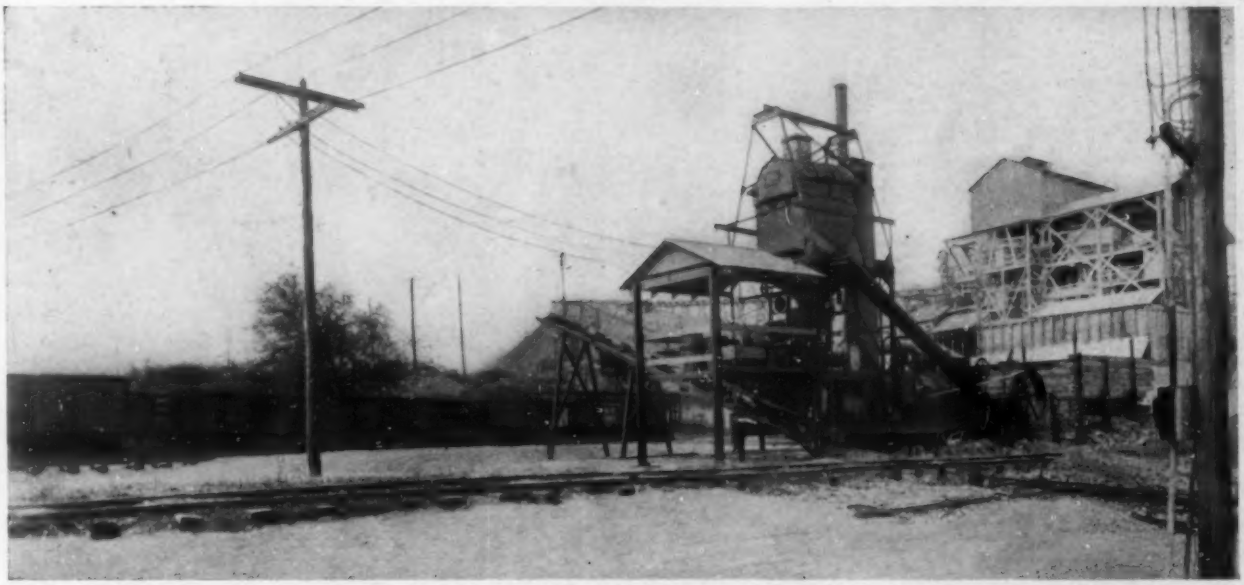




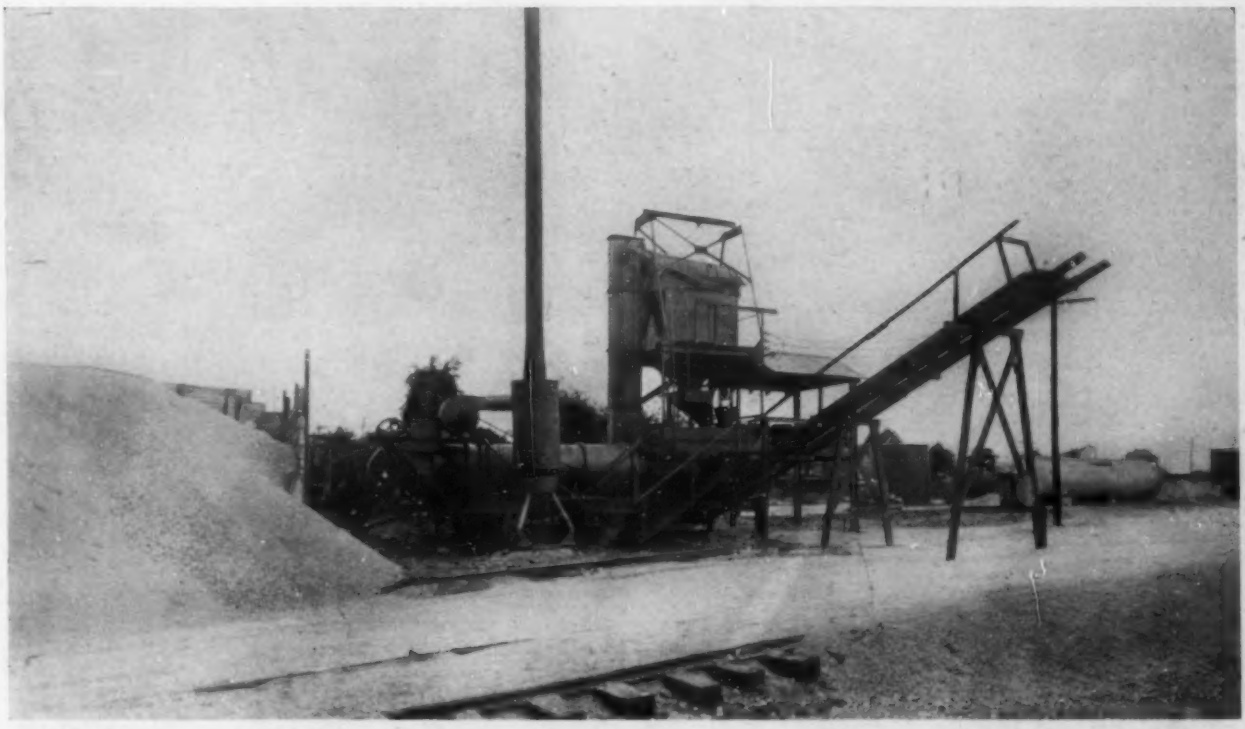


Edmund Shaw will tell you about this (he calls it almost unique) plant in an early issue of Rock Products. Don't miss it!

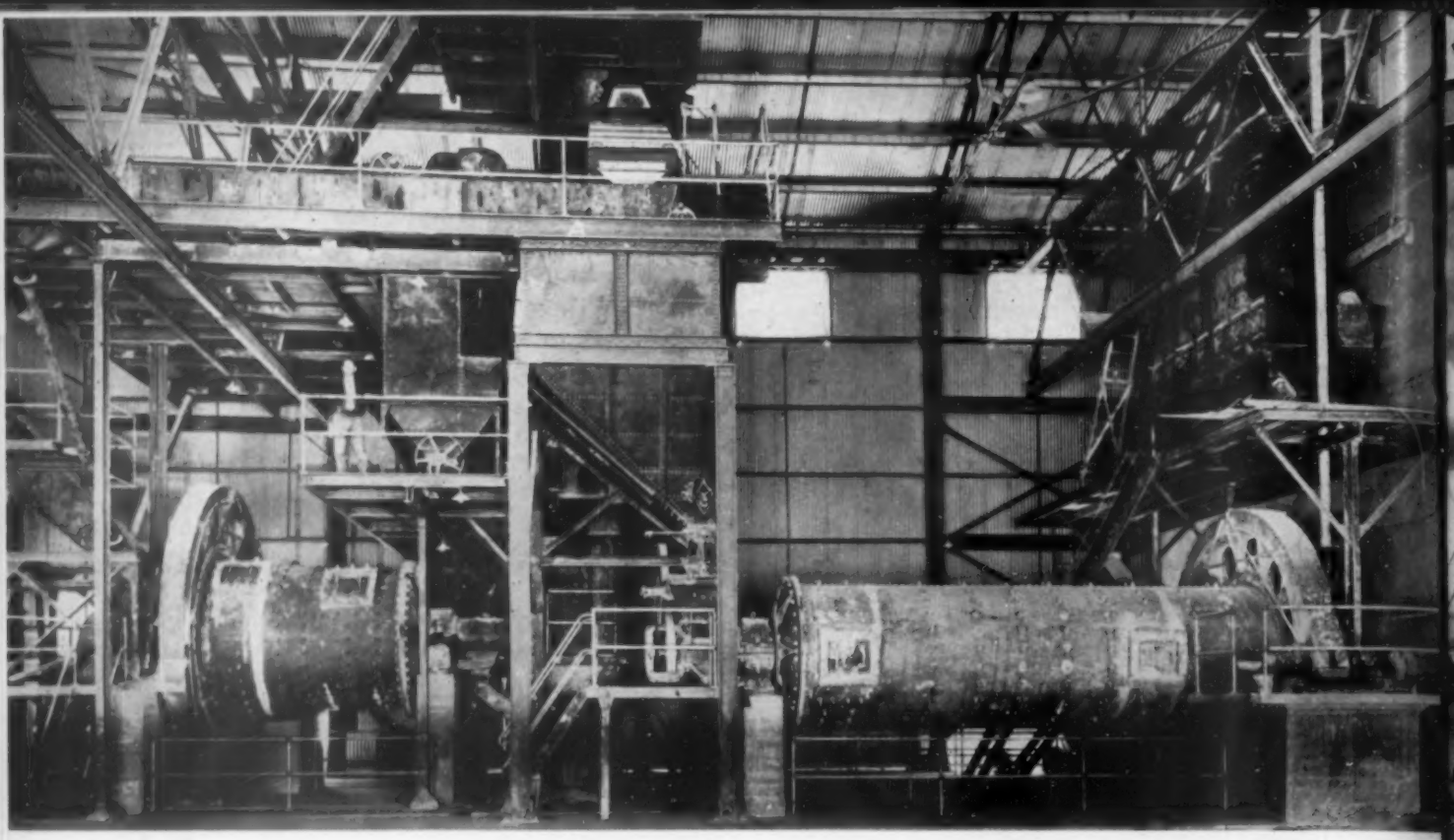
Crushed Stone Merchandised As Asphalt Road Mix



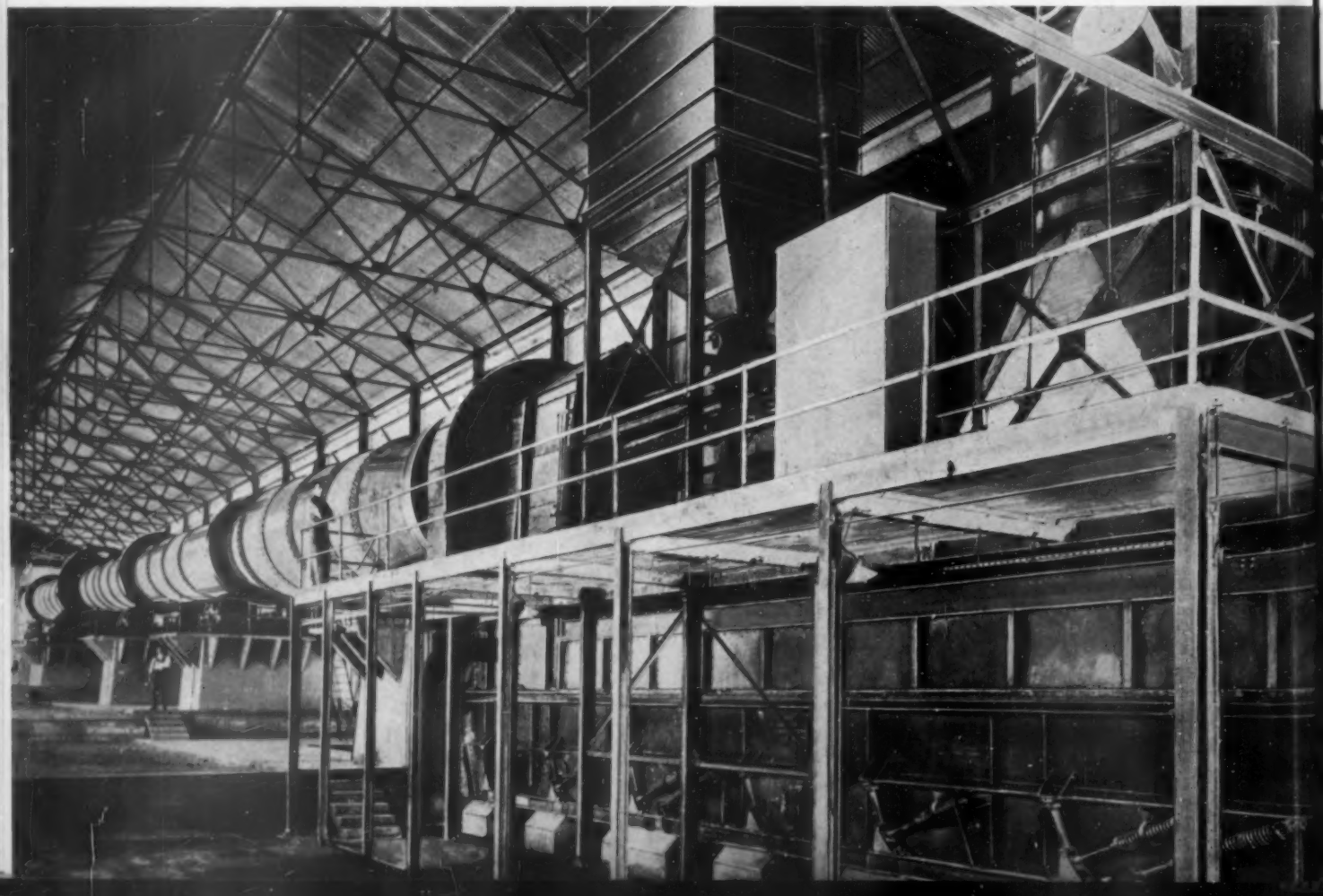
This No. 310 Warner Brothers portable asphalt plant was put into service in 1936 by Servtex Materials Co., New Braunfels, Texas, to fill a demand for emulsified and cutback asphaltic concretes. Crushed stone is hauled by truck from storage bins in the background to the hopper on the right. The asphalt plant is equipped with a twin pug mill mixer which has a capacity of 20 to 25 tons of asphaltic concrete per hour. A gear pump handles the material from storage to the 500-gal. heating unit and a second pump circulates it from the heating unit to the pug mill mixer.

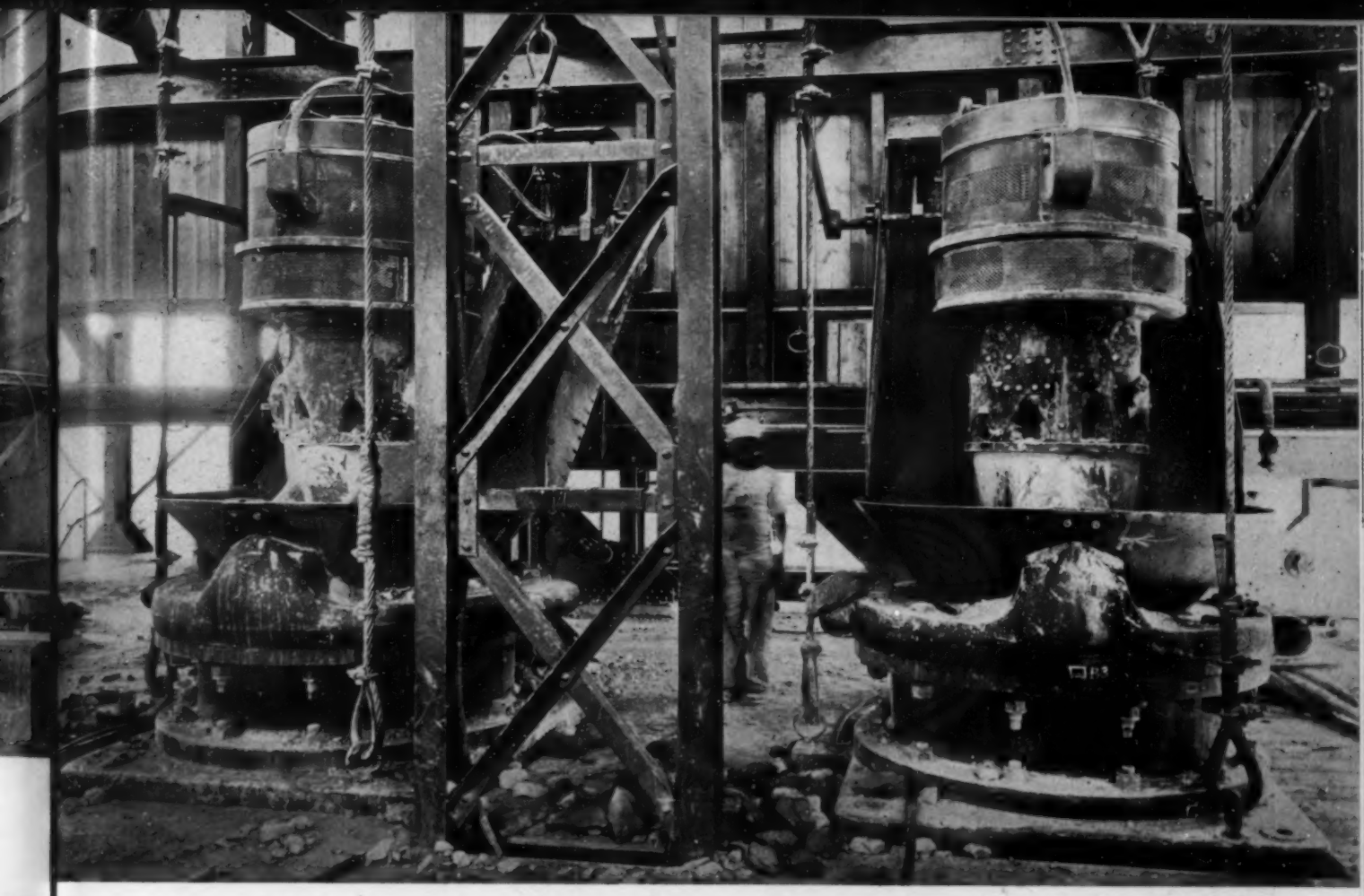


Finished material is dumped from the pug to a hopper and carried by belt conveyor to railroad cars or trucks. Natural gas is used for the dryer and heating unit; electricity to power all equipment.

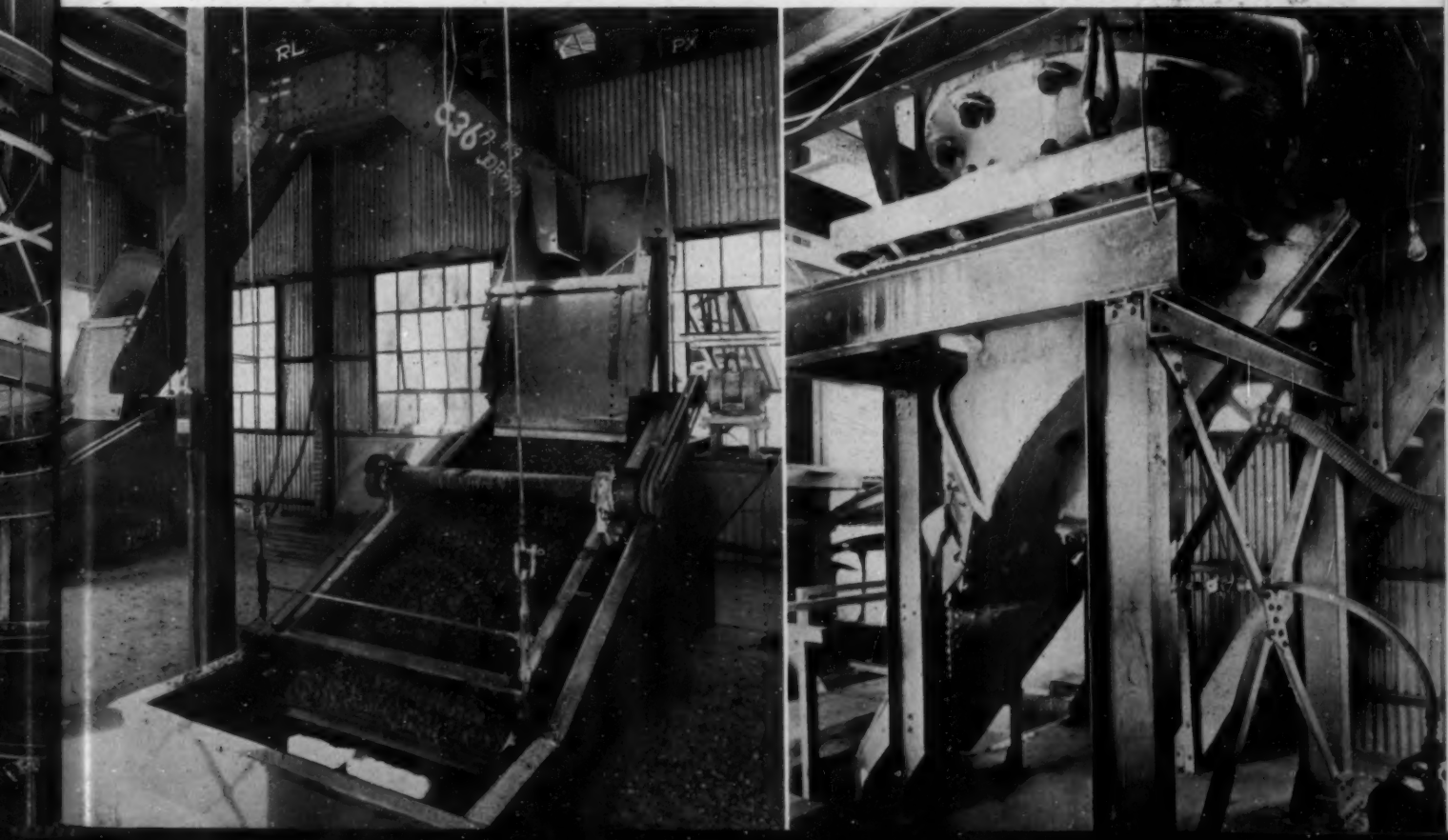


Allis-Chalmers Manufacturing Co. designed and furnished the equipment for this South African cement plant in 1936. ABOVE: Preliminators and Compeb mills for clinker grinding. BELOW: Wet process kiln 8x10x250 ft., with 3x50-ft. air-quenching clinker coolers.





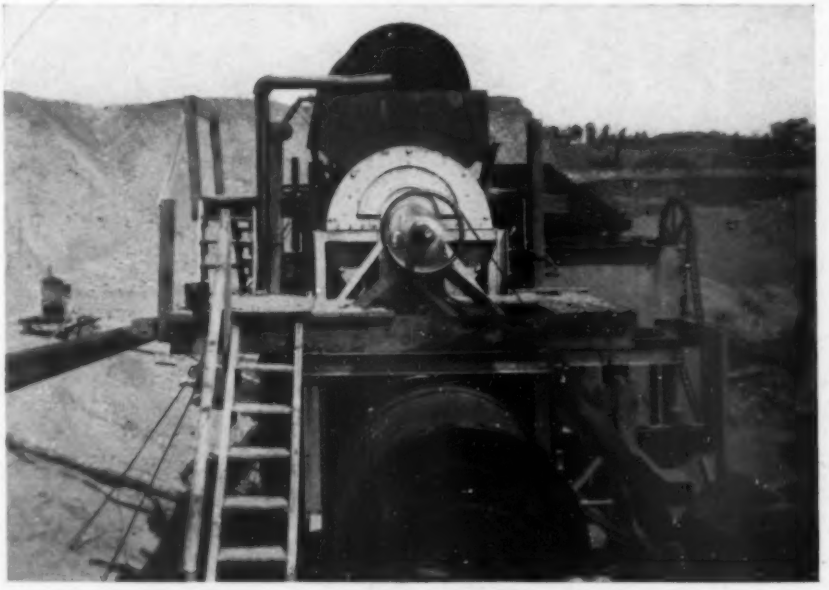
ABOVE: Pair of 10-in. Style "B" Newhouse crushers. BELOW: Single-deck 4x10-ft. Aero-Vibe screens: One of the Newhouse crushers seen from below. South African cement plant built in 1936 and equipped with American machinery



Eliminating Soft Stone From Gravel

ONE of the major problems in the use of glacial gravels as coarse aggregates in jobs of any importance is the presence of soft stone in appreciable quantities. Increasingly rigid specifications, limiting the percentage by weight of such soft material, have placed hardships on many producers. Some sizeable contracts have been lost because no satisfactory means of reducing the soft stone content to meet such requirements have been devised, and the very existence of some plants has been threatened.

W. P. McCarren, producer of sand and gravel at Walhonding, Ohio, was faced with such a problem in furnishing aggregates for the Mohawk dam in 1936. This dam is part of the Muskingum Valley flood control project, being built under the supervision of the United States Engineers—notorious for the strictness of aggregate specifications.



Close-up of soft stone eliminator



Rebuilt sand and gravel plant of W. P. McCarren, Walhonding, Ohio

Material is taken from a bank, containing an appreciable percentage of soft stone in the form of limonite, or kidney stone, together with sandstone. The plant was completely rebuilt late last winter and was practically designed around the new equipment to remove soft stone.

Built Around Eliminator

Material is taken from the bank by dragline and first put through a scalping plant. The oversize is passed through a portable crusher in closed circuit with the scalper. The sand and stone are then elevated to a 24-ft. blind scrubber, on the end of which are the sand screens. After the sand is removed, the stone is passed through a Knickerbocker soft-stone eliminator and is conveyed by belt to a horizontal screen, at which point it is sized and graded.

During the past year, practically all of Mr. McCarren's output has gone into the construction of Mohawk dam. His rebuilt plant, to which the soft stone eliminator was added, has made it possible for Mr. McCarren to easily meet the U. S. Engineer Department specifications, relative to soft stone content. The hourly capacity of his plant is about 45 tons of stone and a similar quantity of sand.

New Concern

DIAMOND ROCK ASPHALT CORP., Bowling Green, Ky., is making arrangements to start operations in the asphalt fields of Edmonson county. The company has taken local offices and has been granted a charter as a Delaware corporation. Officers are: Ellis Inlow, president; John Adams, vice-president; H. C. Pryer, secretary; J. W. Cross, Jr., treasurer. L. F. Strobel will be in charge of operations. It is understood that the concern is starting out with substantial contracts for paving material.

New Roofing Plant

LLOYD A. FRY ROOFING CO., Memphis, Tenn., a new concern, is expected to be in production in the spring to manufacture asphalt roll roofing, shingles and allied products. About $125,000 is to be invested in a 60,000 sq. ft. plant, which will employ 125 workers.

"Gone With the Wind"



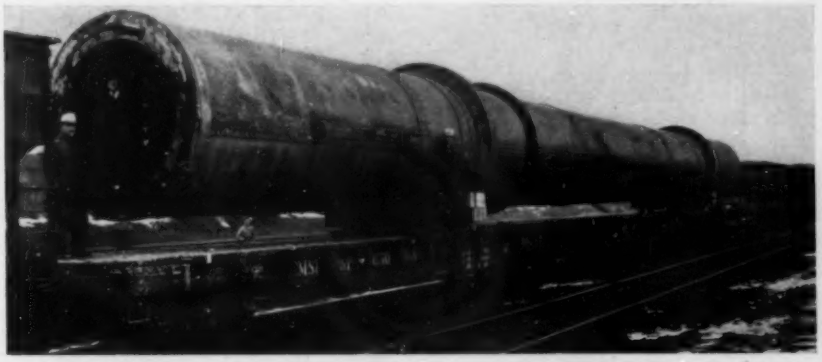
MICHIGAN'S STATE CEMENT PLANT

NO NEW cement plants were built in 1936—during which less than 50% of the existing capacity of the industry was utilized. But at least one old plant was dismantled and sold to the junk dealers. And the industry shed no tears, for that plant was the Chelsea, prison-labor operated plant of the state of Michigan. It had not been operated since 1931, but during the period the state did operate it, legitimate, tax-paying cement manufacturers were deprived of 4,000,000 bbl. of business, and this 4,000,000 bbl. cost the state tax payers much more than the 4,000,000 bbl. could have been purchased for in the market.

The plant was built in 1903. It was leased to the state in 1923 for five years at $75,000 per year, and in 1925 bought by the state for $500,000, the previous sums paid on the lease applying on the purchase price. In addition the state advanced $658,606 for working funds and repairs and rehabilitation. Not included were large sums spent to house and guard the prisoners.

The Chelsea plant never paid its operating costs; never made a cement equal in quality to the commercial article; was a political football. In June, 1931, on the insistence of Governor Brucker, the legislature passed a bill permitting the sale of the plant. In spite of the $1,200,000 the state had invested in it, no cement manufacturer considered it possible to make a satisfactory cement at this plant, so in 1936 it finally all went to junk dealers for approximately $50,000.

At least one state has learned a lesson in cement manufacture.



Sixty-foot kiln, a relic of the past, leaves Chelsea cement plant for the junk yard



All that is left of the Michigan state cement plant: Some nice concrete silos for sale, if you can move 'em!



Michigan state cement plant at Chelsea as it looked before dismantling began in 1935

Advancements

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, has made P. G. Dawson vice-president, treasurer and a director; and Fred Pickford, former assistant secretary, was made secretary. Mr. Dawson started as a stenographer with the Newaygo Portland Cement Co. in 1913 and later became secretary to J. B. John, then president of that company. He was later connected with the Manitowoc Portland Cement Co., and with the merger of the two companies into the Medusa Portland Cement Co. came to Cleveland as secretary of the enlarged company.

Now President

BESSEMER LIMESTONE AND CEMENT CO., Youngstown, Ohio, announced the election of G. C. Treat as president. Mr. Treat was formerly executive vice-president and treasurer, and succeeds the late Charles Schmutz. J. O. Adams continues as secretary and the following vice-presidents were named: Frank R. Warren, in charge of sales; R. E. Roscoe, in charge of chemical engineering, and D. C. McKee, in charge of operations.

Wage Increase

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, recently increased the wages of employes 10% and took out $1000 group life insurance policies for each employe.

Year-End Bonus

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., granted year-end bonuses from $25 up, to all employes, according to years of service.

Cut in Coast Prices

PORTLAND CEMENT prices were cut 33 cents a barrel in metropolitan New York in December, with reductions of from 12 to 43 cents a barrel in Boston, Mobile, Pensacola and Panama City. The cuts were made in an attempt to meet foreign competition.

Fires More Kilns

COPLAY CEMENT MANUFACTURING CO., Coplay, Penn., placed two additional kilns into operation December 1, and was reported to be operating 4 kilns. Indications point toward an increased production basis throughout the winter.

Pay Boost

SPOKANE PORTLAND CEMENT CO., recently increased the wages of common labor by 10% at its Irvin, Wash., plant following a similar increase recently given the quarry workers of the company at Powell Spur, Wash. The company is preparing to step up cement production in anticipation of increased demands in the spring for Grand Coulee dam construction.

Dust Collector Installation

CALAVERAS CEMENT CO., San Francisco, Calif., is reported to have started work on construction of a $110,000 Cottrell electrical precipitator at its San Andreas plant. This installation is expected to collect 95% of the stack dust. It was also announced that a new type of cement is being manufactured, especially designed for canal linings, sea water piers, dams and massive foundations. The product is a portland-puzzolan cement, combining true pumicite with portland cement.

No Winter Layoff

PETOSKEY PORTLAND CEMENT CO., Petoskey, Mich., through its manager, J. L. Galster, recently promised employes that there would be no winter layoffs. It was predicted that business for the plant in 1937 would exceed the 1936 volume by 15%. The sale of 1,250,000 bbl. in 1936 doubled the 1935 output While production is to be halted for the month of February, employes will be continued on the pay rolls and used on repair work.

Year-End Bonus

CALAVERAS CEMENT CO., San Francisco, Calif., recently granted a bonus to all employes, the amount based on length of service with the company.

Stops Production

GREAT LAKES PORTLAND CEMENT CO., Buffalo, N. Y., has discontinued production until spring due to the seasonal lull in business. Two kilns had been in operation since April 1. Shipments from storage continue.

Cement Statistics

THE PORTLAND CEMENT INDUSTRY in November, 1936, produced 10,968,000 bbl., shipped 8,962,000, and had in stock at the end of the month 20,086,000. Production and shipments in November showed increases, respectively, of 54.6% and 50.0%, as compared with November, 1935. Stocks at mills were 7.1% lower than a year ago.

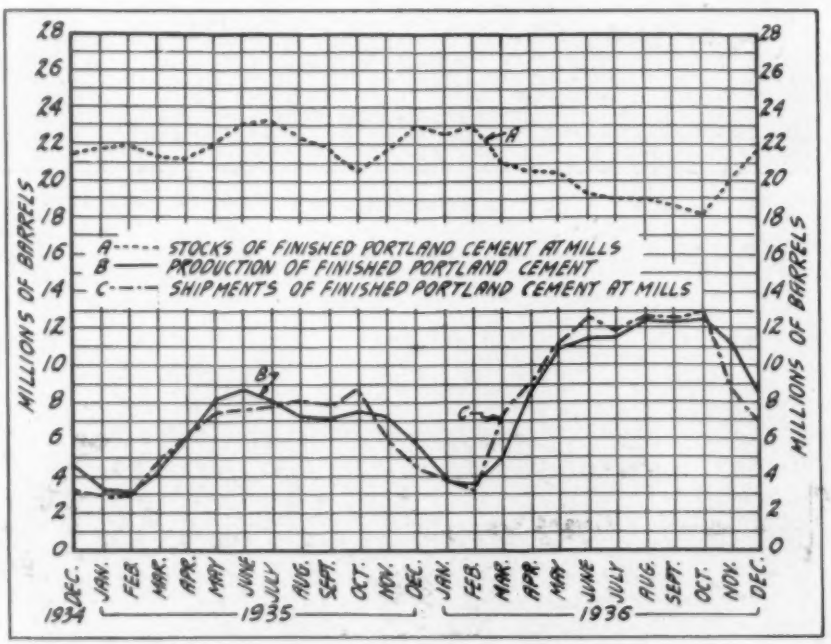
The statistics here given are compiled from reports, received by the Bureau of Mines from all manufacturing plants except three, for which estimates have been included in lieu of actual returns.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 160 plants at the close of November, 1936, and of 163 plants at the close of November, 1935.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	November		Oct.	Sept.	Aug.
	1935	1936	1936	1936	1936
The month..	32.2	50.9	56.0	57.1	56.2
The 12 months ended	28.1	41.5	40.0	38.1	36.1

For the year as a whole it appears that production was about 110,000,000 bbl., a gain of about 45% over 1935. Prospects are for a 15% gain in 1937 over 1936.



Cement statistics for three years, in graph form

Concrete Products

Cement Products

SECTION of ROCK PRODUCTS

OPPORTUNITY knocks at the door of every producer or manufacturer of concrete and *all* its ingredients.

Now is the time to lay the foundations of a whale of a future market in "concrete for residential construction."

Recovery in residential building is still a small fraction of "normal." Concrete, while getting a larger share than heretofore, can obtain a great deal more if the producers will take a more active part in promotion.

Handling concrete with Rex Moto mixers on South Chicago housing project



How to Learn to Promote Concrete

A PROGRAM packed with information on modern construction and merchandising methods has been completed for the first National Conference of Concrete Contractors to be held at the Hotel Sherman in Chicago on January 18, 19 and 20. Nationally recognized leaders in concrete contractor work not only will discuss but will show with demonstrations and motion pictures how modern concrete structures are being built and sold successfully today. From the largest concrete house job to the smallest colored concrete flagstone, every subject will be completely dissected and analyzed.

Concrete Houses

A session on reinforced concrete house construction will include discussions on various types of wall construction, forming methods and costs. "How We Built the Purdue Research Foundation House" will be discussed by Robert E. Schwartz, of the Chas. Gambsky Co. "Building My Insulated Double Concrete Wall House" will be the subject of Stanley G. Cutler, consulting engineer of Chicago. A motion picture of building a ribbed concrete wall house will be shown by A. P. Turner, of the Turner Gravel Company, San Antonio, Texas. Actual working models of forming systems also are planned for demonstration at this meeting.

A forum on residential and industrial floors will feature the latest methods of constructing and finishing concrete floors, with one of the talks to be given by M. E. Feddeler, of the Ce-Mas-Co Floor Co., Chicago, on durable floor finishes for heavy factory trucking.

Advertising and Sales Promotion

In a joint session to be held with members of the National Concrete Masonry Association, holding a convention on the same dates at the Sherman Hotel, Bernard Johnson, editor of *American Builder*, will forecast opportunities in the building field. Following him, W. D. M. Allan, director of promotion, Portland Cement Association, and J. M. Cleary, of Roche, Williams and Cunnyngham, nationally recognized advertising agency, will speak on the part advertising plays in concrete house promotion.

Pumpcrete

How the newly developed, smaller "Pumpcrete" can be used to distribute concrete on smaller jobs will be explained by G. F. Ball, chief engineer, Chain Belt Co., Milwaukee. Illustrated by motion pictures of the equipment in operation, this paper promises to be a highlight of the conference.

There will be a trial mix demonstration and a talk on the principles of good concrete making. Proper methods of using colors and the placing of colored concrete will be discussed and demonstrated.

Discussions will be developed on proper cost records, exposed aggregate for driveways, short cuts in precast concrete joist floor construction, and other subjects, as time permits. The Portland Cement Association will hold open house for the inspection of their research laboratories the last afternoon of the convention.

Concrete Industries Exposition

A feature in connection with the conference will be an extensive exhibit of concrete products and contractor equipment and supplies.

The conference program was arranged by the meetings committee, which includes: Norman V. Karstens, P. J. Karstens & Son, contractors, Chicago, chairman; T. A. Rehnquist, T. A. Rehnquist Concrete Floor Co., Chicago; Bert Carey, Carey-Wrobel Construction Co., Forest Park, Ill.; John W. Peterson, Drott-Petersen Construction Co., Chicago; and J. W. Lewis, Portland Cement Association.

PROGRAM

1937 Convention

National Concrete Masonry Association
Hotel Sherman, Chicago
January 18, 19, 20, 1937

Monday—January 18

REGISTRATION—(Mezzanine Floor)—9:00-10:30 A.M.
Meeting (Louis XVI Room—1st Floor)
Dan F. Servey, Presiding
Report of Directors
Report of Secretary-Treasurer
Appointment of Committees
Election of Directors
"The Philadelphia Plan"
By Charles Lower, Bethayres, Penn.
Luncheon
Afternoon (Louis XVI Room—1st Floor)
Dan F. Servey, Presiding
"An Idea That Clicked"
By J. W. Lewis, Portland Cement Association
"Building a Concrete House Building Organization"
By John L. Strandberg, Kansas City, Mo.
"How Model Homes Sell Concrete Houses"
By Chas. Joern, Chicago, Ill.
"Why I Am Specializing in Concrete Houses"
By Paul Cahill, Toledo, Ohio
Adjournment to Concrete Industries Exposition
Evening
Meetings of Special Groups

Committee Meetings

Tuesday—January 19

Morning (Bal Tabarin Room—6th Floor)
W. G. Kaiser, Presiding
Joint Meeting with First National Conference of Concrete Contractors
"What Can 1937 Mean to the Concrete Industry?"
By Bernard L. Johnson, Editor *American Builder*, Chicago
"How FHA Will Help You in 1937"
By Theodore E. Damm, Chief, Industries Section, FHA, Washington, D. C.
"What the PCA Will Do to Help You Get More Business in 1937"
By W. D. M. Allan, Director of Promotion, PCA, Chicago
"What You Can Do to Cash In"
By James W. Cleary, Vice President, Roche, Williams & Cunnyngham, Chicago
Luncheon
Afternoon (Louis XVI Room—1st Floor)
Austin Crabbs, Presiding
"Utility Uses of Concrete Block"
By Herbert A. Davis, South Washington, Va.
"Selling the Larger Job"
By Herbert J. Vincent, Detroit, Mich.
"Why We Should Standardize Unit Sizes"
By Benjamin Wilk, Detroit, Mich.
Discussion
Committee Reports
Election of Directors
Adjournment to Concrete Industries Exposition
Evening
Annual banquet and stag entertainment—Large Ballroom (Mezzanine Floor). Entertainment by many of Chicago's best known professional entertainers and radio stars, through courtesy of the Concrete Masonry Association. Something new, startling, different. The biggest show a concrete convention has ever seen. 21 Acts. Banquet will be participated in by other groups in the concrete and concrete products field meeting in Chicago, January 18 to 21. You and your friends are invited.

Wednesday—January 20

Morning (Louis XVI Room—1st Floor)
Geo. H. Krier, Presiding
"The Low-down on High Early Strength Block"—Discussion
"Weight Control Means Dollar Control"
By M. W. Ferguson, Roanoke, Va.
"Volume Control"
1. The Need for Volume Control
By W. G. Kaiser, Manager, Cement Products Bureau, PCA
2. Practical Progress of High Pressure Steam Curing"
By J. C. Vosburgh, Chicago
3. Electric Curing of Concrete Products
By J. Miller Smith, Detroit
4. Proper Yard Curing
By L. E. Schwalbe, Wauwatosa, Wis.
Afternoon
Open for Inspection Trips
Committee Meetings
Meetings of Special Groups

What a Really Modern Products Plant Is Like

THE Chase Building Products, Inc., Ft. Worth, Texas, manufacturer of "Worthcrete Tile," is established in a new location at 2600 Pine St., where an extensive program of expansion in line with steadily improving business is anticipated.

John S. Chase, president and general manager, reported business for 1936 the best since the company was begun, nine years ago.

An office, plant and warehouse for manufacturing and servicing of Worthcrete tile, other building materials and specialties have been provided at the new location, which affords 90,000 sq. ft. of ground surface.

In its nine years of operation, Chase Building Products, Inc., has produced more than 5,000,,000 Worthcrete tiles in addition to other concrete products. The plant has served Fort Worth and surrounding territory. Among other projects, Worthcrete tiles were furnished for the largest schools constructed in the Forth Worth school building program, as well as for numerous new residences.

The tile is particularly suited for residential construction, Mr. Chase says. A separate department handles the company's building specialties, and serves part of Oklahoma, Arkansas, Louisiana and New Mexico as well as all sections of Texas. A sales office is maintained in Dallas at 310 Construction Building.

These specialties include form ties for highway and building construction, concrete nails, metal toilet and shower partitions, terrazzo contractors' supplies, anchor slots, brick, stone and terra cotta anchors, floor clips, wall plugs, water-proofing and kraft building paper. Common brick, face brick, masonry paint and concrete sewer pipe also are handled.

New Plant

HORTON-WILBERT VAULT SERVICE, Conneaut, Ohio, a new concern resulting from the merger of the Horton Silverseal Vault Co. and the Wilbert W. Haase Co., is to start operations the first of the year at the rate of 500 concrete vaults yearly. The firm will serve Ashtabula county in Ohio; Erie, Crawford and Warren in Pennsylvania; and Chatauqua county in New York.

Large Demand

THOMAS CONCRETE PIPE CO., Ada, Okla., has enlarged its plant to occupy 4200 sq. ft. in an effort to meet demands for its products. More than 75 men are employed in this plant. Most of the demand is for 18-, 24- and 30-in. culvert pipe, with as many as 60 truck loads daily going out from the plant.

Enlarges Machinery Line

THE MULTIPLEX CONCRETE MACHINERY CO., Elmore, Ohio, manufacturer of concrete products machinery and equipment, has recently taken over the Edmonds Dimension Stone Machine Co., Washington, D. C. The principal product made by the latter company is a machine for making cast stone which, according to the owners, will pay for itself in 4 to 6 months' actual operating time. The machine is said to be adjustable to make stone one inch square to 20-in. by 20-in. by 6 ft., and is also offered to concrete products plants for the manufacture of sills and lintels.

Plans 10th Plant

UNIVERSAL CONCRETE PIPE CO., Columbus, Ohio, is said to be planning to establish a pipe plant at Youngstown, Ohio. This will be the 10th unit operated by the company in the east.



Office, plant and warehouse at new location of Chase Building Products, Inc., Ft. Worth, Texas

Merchandising Concrete Products—Part 2

"Aggressive Selling" By Harold O. Hayes

AGGRESSIVE sales methods focus attention of buyers upon your product. And the ever-increasing competition for the consumer's dollar makes aggressive selling a vital necessity for success.

What do we mean by aggressive selling? Keeping a watchful eye on every new job—then making a price that will "beat the other fellow"? No, indeed!

Aggressive selling of concrete products starts before the job is announced. It is telling your story repeatedly in the right places to establish a quality mark on your product in the mind of every potential buyer; creating a state of mind that expects to pay more for your product because the buyer believes it is a better value.

It is having the architect and the builder constantly "for" you and what you sell. It is having the banker, the building and loan secretary, and the real estate dealer sold on your product —always boosting it because they believe it is right.

And it is following up, the minute a job is announced, to see that your products have been considered wherever they may be practical—and to walk out with the order at a *fair, profitable price.*

Aggressive selling doesn't end here. For the aggressive salesman makes sure there is no "slip-up" in delivery; that there is no "slip-up" in quality; that there is no "slip-up" by the builder; that the completed job is all that it should be to make another solid pier in his foundation for future sales .

The day is past when the concrete products manufacturer can say, "My contractors use concrete masonry wherever they can" and wait for orders to roll in. Such a policy will no longer make headway in any market. To progress requires "aggressive selling." And the manufacturer who does aggressive selling will progress. For the march of concrete masonry is at a rapidly increasing pace.

Let's get down to cases. What must the salesman do? First, *he must know his product.* To make sales you must win the confidence of your prospect. And a full knowledge of your product, what it will do and how it should be used, is essential for that.

In selling concrete masonry you must know how strong your unit is; how strong a wall it will make; how it compares in strength with other types of walls. You must know the fire resistance; the heat resistance—with hard aggregate, with lightweight aggregate, with cores insulated and with insulation board.

You must be able to tell him how he can obtain, with your units, the finished wall appearance he desires for his house, in the best and most economical way; how to give his house distinction, or individuality, through some unusual use of your product. You must know where to recommend your product, and where to omit it—where it is economical and where it is not economical for each "price range" of homes.

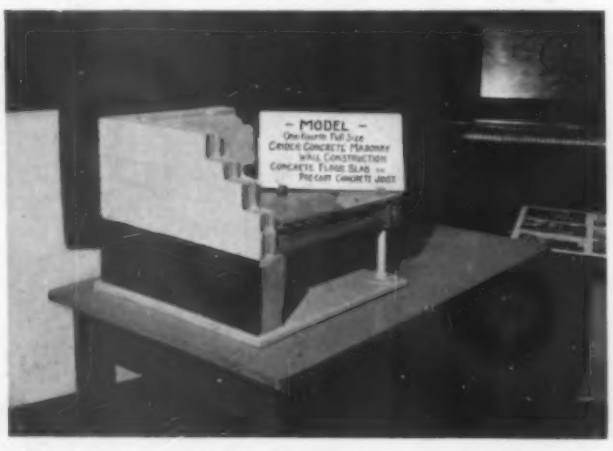
Concrete masonry can be sold without knowing all of these things. But it can't be sold "aggressively" without knowing them. And far more can be sold by knowing them than if you do not. This is just as true in selling concrete joists, or precast concrete floors as it is for concrete masonry sales.

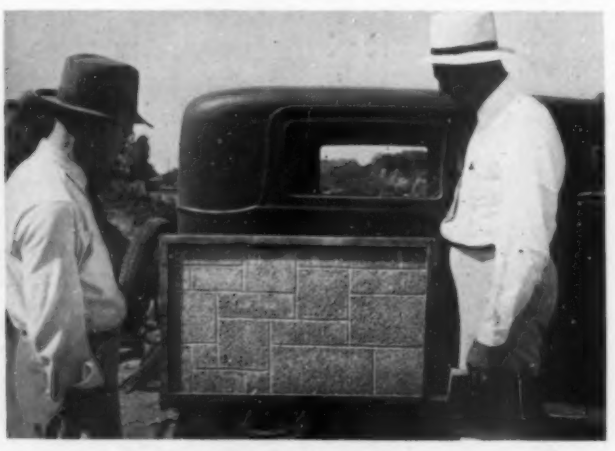
Fortunately, concrete masonry manufacturers now have the most comprehensive assembly of data on the qualities of their product that has ever been completed and published on any standard material. These data have been developed through a series of "full size" and related small scale tests at leading universities, carried out over a period of years. They have been summarized and analyzed to make them of practical sales value. And they have been published by the National Concrete Masonry Association in a book, "Facts About Concrete Masonry." This book is a practical working manual for concrete products salesmen. In it you will find an answer to practically any question dealing with the physical qualities of concrete masonry. To make the data apply specifically to your product it is only necessary to have it equal standard specifications of the American Society for Testing Materials.



A good portfolio arouses and holds the prospect's interest

With a thorough knowelge of your product and its use there is yet another step to take before starting with aggressive selling. *Prepare a sales kit.* A good sales kit includes a portfolio of pictures of completed houses. This should include houses in all price ranges which may be built in your market. If you are just entering the "above ground" market you can probably get pictures from near-by manufacturers.





LEFT—Quarter scale model of housing construction gives prospect an idea. RIGHT—An auto panel serves as an advertisement

Or some material salesman or machinery salesman may be able to help you locate suitable photographs. The nearer your own territory they are the more effective they will be.

In addition to houses in different price classes you should have houses of different architectural treatment; also illustrations which show that different exterior finishes can be applied. Detail construction views should also be included.

These pictures should be 8x10 in., and should be neatly bound. While smaller pictures can be used, a much stronger impression is created with the larger size. And the slightly higher cost is fully warranted.

Home owners are always interested in house plans. So a book of plans is a way to stimulate interest and is a valuable part of a sales kit. Perhaps the prospect will find a design that he will want to reproduce. And if it is from a book of concrete house designs it strengthens your position with the prospect.

A book of this character, "Twenty-two Low Cost, Fireproof Homes" is published by the Portland Cement Association. Another book that can be used effectively as a sales portfolio is "Designed for Concrete," in which the prize-winning designs of the architectural competition of *Pencil Points*, architectural magazine, which was sponsored by the Portland Cement Association, held in 1936, are presented. Pictures of completed homes are also shown, and a detailed description of construction is given.



A trailer with ashlar walls attracts attention to concrete products

In addition to these, a very effective tool is an actual demonstration sample. This may be an exhibit in the office or yard. But more effective is a small scale sample which can be taken direct to the prospect. A number of manufacturers have such portable samples and have found them quite effective. The examples illustrated suggest various possibilities. With these to work from, plant owners may develop such a demonstration unit specially suited to their requirements. Carefully planned exhibits of this kind are powerful stimulators of interest. They convey a far more effective story of the quality of this type of construction, and the interesting results that are possible than can be given by word or picture.

One thing more remains to be added to the sales kit—literature describing what you have to sell—something you can leave with the prospect for him to study—something that will repeat things you have told him, and remind him of the excellence of your product. Such literature may be prepared by the manufacturer, or booklets may be obtained at a nominal cost, from the Portland Cement Association, which may be imprinted and used.

Thus equipped with full knowledge of his product, and with a complete sales kit that will help him tell his story, the concrete products salesman is ready to start "aggressive selling" with a strong, effective story.

(Suggestions for a plan of work will be given in the next article.)

New Plant—New Block

Mason Tile Manufacturing and Construction Co., McMinnville, Tenn., was organized recently to manufacture all types of concrete block and to do contracting and building. A new fiber block patented by J. W. Mason is to be made at this plant. According to Mr. Mason, this new unit is fire- and water-proof as well as termite-proof and nailable. He claims that this unit is 20% more economical than wood for inside and outside construction.

READY-MIXED CONCRETE Is Proving to Be MOST RAPIDLY GROWING Branch of the CONSTRUCTION MATERIALS INDUSTRY

Sales Methods—Cold and Hot Weather Difficulties—Research—Kinds of Construction Serviced—Equipment Standards—All Discussed at Length

Producers from all sections of the United States and some from Canada gathered for the seventh annual convention of the National Ready Mixed Concrete Association's convention at Memphis, Tenn., December 11 and 12, to exchange ideas on sales practices, operation of plants, control and inspection methods and standards.

The meetings of the association, which followed those of the National Sand and Gravel Association, drew a capacity attendance—real evidence of a good business season. Predictions for 1937 indicate that members will return in a year to tell of still further progress.

Officers elected for 1937 were: President, Joseph L. Shiely, St. Paul, Minn.; vice-presidents, P. F. Ayer, Cambridge, Mass., J. F. McCracken, Louisville, Ky., R. B. Young, Toronto, Ont., Canada; secretary, Joseph H. Dixey, New York, N. Y.; treasurer, Stephen Stepanian, Columbus, Ohio; member-at-large, H. F. G. Pelsue, Los Angeles, Calif.

Sales Methods

After a short talk by President Shiely on the value of the association to its members, a round table discussion was held on "Sales Methods." J. H. Dixey, New York, N. Y., said that ready-mix concrete is sold to contractors in metropolitan New York, in successful competition with the raw materials, in spite of the fact that the ready-mix producer also has to purchase his raw materials in the same market. He said that a tentative specification was being worked out for *premium concrete*.

Garvin Pelsue, Los Angeles, Calif., said that his company merchandised its product on the basis of the number of truck-hours in a month's business. Mr. Pelsue said that price must include a variable transportation cost per hour, a variable batching cost, a fixed transportation cost, a fixed plant cost, an administrative cost and a charge for profit. He said that an accurate determination of the trip time on any one job is made to closely control the profit element. On 3½-yd. mixers, a credit of $3.00 is given the contractor for each hour saved by him on the job. A credit certificate is given him to this effect. The system of giving credits and of making the standing charge of $5.00 per hour, in effect now for three months, according to Mr. Pelsue, has been instrumental in keeping operations closely

to schedule. Comparative figures on the new system against the old revealed a saving of 266 truck-hours in the total estimated time, at a cost in credits of $300. By knowing the number of truck hours of operation, he could estimate monthly profit or loss very accurately in a very short time.

J. E. DONELSON, Birmingham, Ala., told of his company's experiences in installing their truck mixers on the contractors' trucks. He believed such an arrangement to be more economical than owning transit mix trucks and said that the arrangement was such that the accurate costs for any day could be told at the start of the next day. E. B. Rayburn, Jr., Indianapolis, Ind., said that the first step in his territory was to sell the entire area on the advantages of ready-mixed concrete, after which the price was set. Such missionary work showed that most small contractors were willing to pay a premium of 50 cents a yard for good concrete in preference to mixing on the job.

Cold Weather Handling

IRVING WARNER, Philadelphia, Penn., told of his experiences in "Handling Ready Mixed Concrete in Cold Weather." His recommendation was to have a boiler with a power rating of 2 hp. for each yard per hour output. He told of the use of steam pipes around the outlets to the batchers, and half way up the slope of the bins. In his experience, no "flash set" occurred when water as hot as 200 deg. F. was added to a batch, provided that the cement was added last. He emphasized the importance of eliminating any frozen lumps in the mix, which upset the control entirely, and said that his practice was to add steam at the bin outlets. Mr. Warner said that all concrete went out from the plant at 70 deg. The lower the water content, the hotter the water that can be used.

ALEXANDER FOSTER, JR., Philadelphia, Penn., cautioned against sending concrete to the job with temperatures as high as 85 to 90 deg. when leaving the plant. He said that such concrete stiffens up too quickly. He told of a 1:2:4 concrete with a 6-in. slump leaving the plant when the outside temperature was 32 deg. F. After a haul of ¾ mile, with a mixing speed of 4 r.p.m., the slump dropped to 1 in. Very hot water and heated sand caused quick action when coming in contact with the cement. This condition does not exist, according to Mr. Foster, if the temperature of the mix, when leaving the plant, is held to 70 deg. An average water temperature of double the desired mix temperature was suggested as a rule-of-thumb method of control. H. F. Thomson, St. Louis, Mo., said that some specifications place an upper limit of 130 deg. for mixing water, making necessary the heating of aggregate.

R. B. YOUNG, Toronto, Ont., said that water temperatures as high as 180 deg. did not have any detrimental effects. He said that the biggest problem was in protecting the concrete when placed in the structure and suggested that ready-mixed concrete operators should be interested in how the contractor protects the concrete on the project. According to Mr. Young, very little allowance is needed for heat losses between the plant and the job. He said that in Canada practically all heat is applied to the mixing water and that aggregates are heated mainly to thaw them out. No live steam is released in the bins and dry steam coils are satisfactory in temperatures down to 40 deg. below zero.

G. W. COOPER, Detroit, Mich., said that concrete was delivered by his company at 70 deg. or less, with 45 deg. considered as the danger point. Live steam is used in stockpiles and closed steam pipes in the bins, to maintain constant temperatures. Calcium chloride is used in the mix as an aid to the contractors.

PRESIDENT SHIELY spoke of a 100- to 150-yd.-an-hour plant, built for continuous operation in extremely cold weather. The boiler unit in this plant is 30 ft. below the ground with headroom for immense water storage, all completely enclosed. Dry steam in pipes heats the aggregates in the bins. He recommended the use of electric vibrators on the sides of the bins to eliminate "coning" and to remove all material.

Hot Weather Handling

Selected speakers told of their experiences and difficulties in handling ready-mixed concrete in hot weather. J. F. MCCRACKEN, Louisville, Ky., said that dry subgrades took up a good percentage of the water, and that there was considerable difficulty in maintaining a consistent workability. With city water temperatures as high as 85 to 90 deg., workability and slump are reduced. He said that rich mixtures would dry up considerably, which condition had to be overcome by the addition of extra cement and water.

J. E. DONELSON, Birmingham, Ala., stated that a minimum amount of water was added in the morning by his company, and increased steadily to a maximum in mid-afternoon. The slag aggregate is first sprayed with water to absorb 2½% moisture in dry hot weather. Others said that main hot weather troubles occurred after placing, some specifications requiring the addition of extra water in the mixer, the requirement of some cements for different mixes and the effect of greatly reduced humidity.

LION GARDINER, Columbus, Ohio, suggested that as much as a 2% negative moisture exists in aggregates under certain weather conditions. R. B. Young, Toronto, Ont., Canada, said that this condition could be compensated for by spraying aggregates over the reclaiming belt from stockpile. He suggested that the cement itself possibly absorbed moisture. E. B. Rayburn, Jr., said that finer cements showed greater stiffening characteristics in hot weather, and that a couple of cements used in his case made a concrete that lost as high as 2 in. slump just 30 minutes from the plant. According to J. L. Shiely, some cements when delivered in closed cars reach their destination with temperatures as high as 135 deg., with resultant loss in strength.

Needed Researches

The first session was concluded with a round table discussion on "Needed Researches in Ready-Mixed Concrete," led by R. B. YOUNG, chairman of the Technical Problems Committee. The committee had met earlier in the day to discuss the coöperation of the association with other concrete gatherings in the design of concrete mixes, etc., with the result that the association is to be adequately represented at the coming sessions of the American Concrete Institute and others. Among the subjects to be discussed with other groups are the development of methods of sampling wet concrete, the cost of ready mixed concrete as compared with that mixed on the job, field test data and segregation. Other problems to be taken under consideration by the committee are the use of dryer mixes, vibration of concrete, high early strength cements and the discussion of slump tests and cylinder tests. The feasibility of the use of locked devices, specified cements and certification by a testing engineer are also to be taken into consideration.

Federal Legislation

Several legislative enactments of the last session of Congress have their influence in the ready-mixed concrete industry. V. P. AHEARN, executive secretary, National Ready Mixed Concrete Association, briefly discussed the three bills of most significance: the Robinson-Patman Act, the Walsh-Healey Act, and the Social Security Act. The restrictions placed by the Federal Government upon industry in its direct purchases, under the Walsh-Healey Act, were listed and discussed, to familiarize

producers of ready-mixed concrete with the provisions and limitations.

Emphasis was placed on the heavy penalties to be imposed for violations of the Robinson-Patman Act. Mr. Ahearn pointed out that the knowing recipient of a discriminatory price is made equally responsible with the grantor, and gave some examples of where price discriminations are apparently lawful.

He reviewed the provisions of the Revenue Act of 1936 and listed the criticisms of the bill as compiled by the National Association of Manufacturers. In view of the number of bills to be proposed, Mr. Ahearn said that the next session of Congress must be watched closely. He concluded by submitting his opinion as to what to expect, as follows: The O'Mahoney Bill, designed to bring all corporations under strict Federal control by a licensing system, will not pass; the 30-Hour Bill, objective of the American Federation of Labor, will probably fail to pass; the work relief program will be continued; A Federal Housing Bill will probably be adopted; another National Recovery Act is unlikely to be passed.

Business Conditions

The open forum on business conditions revealed the further acceptance by the building industry of ready-mixed concrete in place of job-mixed concrete. Reports by speakers from different sections of the United States to assigned questions showed a business increase throughout the country in 1936, with very good prospects for 1937.

PAUL P. BIRD, Boston, Mass., reported a 10 to 12% increase in volume of business for 1936 over 1935, with a 10% decrease in price, due to more competition. The volume of demand to capacity, not considering new additions to plants, was probably 75%. The principal markets in this area were for publicly financed projects such as bridges and housing, with very little privately-financed construction. A 10 to 15% further increase in business is predicted in 1937 and a better price is hoped for. He said that plants owned and operated by contractors for specific projects did not exist in Boston and that established ready-mixed concrete plants suffered very slightly from competition with companies operating a small amount of ready-mixed concrete equipment as an adjunct to a principal line of business. Ready-mixed concrete is sold in this area usually on a 1:2:4 basis.

J. F. MCCRACKEN, Louisville, Ky., reported a 20% business increase, with a volume of demand sometimes exceeding existing plant capacities. Prices for the first six months in 1936 were low, due to a reduced aggregate price; but were better for the second half of the year. A goodly proportion of the business was for Federal Aid projects. He said that the distillery business was still good and that this industry and many others took considerable quantities of ready-mix concrete. Private construction is expected to increase in 1937, and as a result, a better volume of business is predicted and no worries as to price. He said that ready-mixed concrete is sold under every known type of specification, private jobs being sold on a strength basis.

RAY V. WARREN, Pittsburgh, Penn., reporting for an area including Pittsburgh and surrounding counties served by 44 manufacturers and 107 truck mixers, said that from July, 1933, to June, 1934, the production of 40 manufacturers was 78,538 cu. yd. For the first 10 months of 1936, 21 companies reported sales of 101,951 cu. yd. Generally the demand did not approach capacities, but for a few days demand exceeded truck-mixer capacities. The price level was dependent on quantity discounts, but the delivered price for one company averaged $8.40 per cu. yd. in 1936 compared to $8.27 in 1935. A 20-cent increase per cu. yd. was about the average, taking into consideration the use of richer mixes, and changes in discounts including the elimination of the $1.00 discount on 2 to 26-yd. orders. The bulk of the business was for industrial building, which is expanding, followed by public works. He said that prospects for 1937 were dependent on the employment situation and taxes, but that industrial business would surpass that of 1936 and more residential building is due. The gross price is expected to increase, with the possibility of a lower net because of increased costs of manufacture. The bulk of the sales are for proportioned concrete, the weights specified by the buyer.

CARROLL STEPHENS, Oakland, Calif., reporting for the San Francisco and East Bay regions, said that the volume of business was up 25% in 1936, with a demand requiring 90% of the mixer truck capacities. The price level was unchanged in San Francisco due to a fight among dealers, with an increase of $1.10 per cu. yd. in the East Bay section. A 15% increase in business is forecast for 1937. About 25% of the sales are for strength concrete, the remainder being merchandised on a 1:2:4 $\pm$ cement proportion.

H. F. G. PELSUE, Los Angeles, Calif., reporting for an area serviced by 51 mixer units and 3 operators as well as 18 or 20 batching plants, said that the volume of business was up 20% in 1936, with a slightly higher price. The volume of demand was 85 to 90% of the capacity, the sales being for public building, industrial building and residential building, in that order of importance. Expectations are for a slightly lower volume of business in 1937 due to completion of school projects. Concrete is generally sold on a proportion basis, with sales on a strength basis increasing for private jobs.

E. B. RAYBURN, JR., Indianapolis, Ind., reported a 10 to 15% increase in business in 1936, with an increase in price proportionate to cost increases. About 50% of the sales went for government aided projects, 25% for commercial building and 25% for reconstruction and maintenance work. The forecast for 1937 is for a 5% increase in business. All jobs except state jobs, or about 80% of the demand, are sold on a strength basis as 2000, 2500, 3000, or 3500 lb. concrete.

J. H. DIXIE, New York, N. Y., reported for 13 companies representing 20 batching plants and 180 truck mixers in New York City and adjacent counties. Production was up 60% in 1936, with an output of 900,000 cu. yd. The price was likewise up, with a demand of 60% of the capacity. Large publicly-financed projects took 75% of this demand. An equally good year is forecast for 1937, with prices unpredictable because of unsettled sand and gravel prices. There was no change in competition from plants operated by contractors for specific projects. About 50% of the sales are on the basis of arbitrary proportions and the remainder is specified on water-cement ratio.

G. W. COOPER, Detroit, Mich., reported a 100% increase in business for 1936, along with a 7½% price increase. The volume of demand taxed plant capacities during the spring and fall. Production went into the construction of factories, single homes and public works. Prospects for 1937 are very good, and the year will be started with a 10% price increase. Contractors' plants have kept prices down but have not affected the volume. Most concrete was sold on arbitrary proportions, while city engineers accept strength specifications.

J. L. SHIELY, St. Paul, Minn., reported a 20% increase along with a better price *because* of additional competition. Prospects for 1937 are fair, although much government work has been completed. There has been no outside competition. Public jobs are sold on fixed proportioned concrete, while strength concrete is specified on private work.

C. P. MALONEY, Washington, D. C., said that the entire city is sold on ready-mixed concrete, requiring normally 1,000,000 bbl. of cement. The volume of business was up 50% in 1936 over 1935. Five operators and 150 trucks have been working at 90% capacity

during the year. Prices on private jobs have been unchanged since 1934, with reductions of about 10% on large jobs. Early in 1936, 90% of the production went to government jobs, but since August, 40% of the demand has been for such jobs, 30% for large apartment dwellings and 30% for small homes. A good year is forecast for 1937, mainly in construction of homes. A few jobs were furnished by companies operating a ready-mixed concrete business as a sideline, but without effect on the price. Practically all ready-mixed concrete is sold on specifications based on the weights of the ingredients.

H. F. THOMSON, St. Louis, Mo., reported a 60% increase in business for 1936 for the St. Louis area, with the demand requiring 60% of the capacity. Prices were about the same as in 1935, with the same expectation plus increased costs and taxes for 1937. Industrial building is expected to increase in 1937, with a corresponding drop in public aid jobs. About 40% of the 1936 business was for commercial building, 15% for public utilities and 45% for municipal building. One job of 40,000 yd. was furnished by a contractor operating a ready-mixed concrete plant for that job. Almost all ready-mixed concrete was sold on the basis of proportions, with a growing interest in strength concrete.

Inspection and Control

E. B. RAYBURN, JR., the first speaker in the round table discussion on "Control and Inspection Methods," said that most of the ready-mixed concrete was sold on a strength basis in the Indianapolis area, requiring the design of a different mix for each cement used. His practice is to check cements every six months by sending test cylinders to a local laboratory. He discussed the use of a mechanical arrangement on a central plant mixer with a dial to tell the consistency—with the slump determination of the water-cement ratio. Emphasis was placed on the value of a service department.

JULIUS ADLER, consulting engineer, stated that the increasing tendency was for more rigid technical requirements and accurate control of aggregates, consistencies, etc., than was ever thought of on job mixed concrete. He said that consistencies were exaggerated and that strength requirements were relegated to the background. Therefore, said Mr. Adler, specifications are inconsistent because of lack of recognition that a certain amount of water per cubic yard of concrete is required for a given slump.

R. B. YOUNG, volunteered that inspection serves a double purpose—to protect the customer as well as the producer, and for the collection of data by the producer that can be capitalized.

Standards

The final subject to be discussed was "Ready-Mixed Concrete Standards," led by H. F. THOMSON, chairman, Committee on Standards, with discussions by representatives of leading equipment manufacturers. The discussion was for the purpose of outlining needed standards on equipment to better have representative methods of getting results to the customer.

A tentative draft of proposed truck mixer and agitator standards was drawn up by the committee and submitted at this meeting for discussion and changes. In discussing the standards submitted, C. F. BALL, Chain Belt Co., said that there was a need for safeguards against contractors in regard to mixing times and quality, LION GARDINER, Jaeger Machine Co., said that in view of differences in federal, state and city specifications it was necessary to make a start on standardizing practices, and welcomed other suggestions.

A. A. LEVISON, Blaw-Knox Co., said that improved types of equipment are to be expected and that the standards drawn up were partly to protect equipment now in use so that producer can do what the machinery will permit him to do. One of the main objectives of the tentative standard submitted is to eliminate confusion in the minds of engineers and architects, said R. MACLEAN of Transit Mixers, Inc. Several suggestions were made including changes to add open type blade agitators. A motion was made to return the draft to the committee to be rewritten to include standards on these types of agitators, after which it was to be resubmitted to the members. The meeting closed with the report of the board of directors and the election of officers.

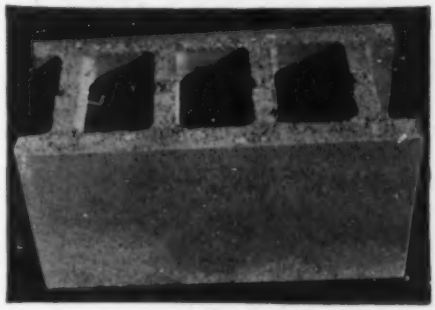
Registration

American Builders Supply Co., Louisville, Ky.—J. F. McCracken.
Arrow Sand and Gravel Co., Columbus, Ohio—Stephen Stepanian.
Big Rock Stone and Material Co., Little Rock, Ark.—R. S. Wilson, Jr.
Blaw-Knox Co., Pittsburgh, Penn.—W. E. Balliet, A. A. Levison.
Boston Sand and Gravel Co., Boston, Mass.—Paul P. Bird.
Brooks-Taylor Co., Birmingham, Ala.—Hayden Brooks.
Buffalo Gravel Corp., Buffalo, N. Y.—H. A. Stelley.
Butler Bin Co., Waukesha, Wis.—M. R. Butler.
Central Concrete, Inc., Brooklyn, N. Y.—A. Johnson.
Central Ready Mixed Concrete Co., Milwaukee, Wis.—M. C. Kolinski.
Certified Concrete, Inc., E. Chicago, Ind.—Mrs. Eva S. Crowe, J. T. Gaither.
Certified Concrete Co., St. Paul, Minn.—A. J. Bryce.
Chain Belt Co., Milwaukee, Wis.—C. P. Ball, G. A. Cooper, B. F. Devine, J. H. Ebershoff, A. E. Miller, W. H. Pinson, J. M. Reiter, W. Sanford, F. C. Wilcox.
Colonial Sand and Stone Co., Inc., New York, N. Y.—J. M. Scheinin.
Colonial Supply Co., Louisville, Ky.—Bob Greene.
Concrete Products and Material Co., Omaha, Neb.—V. C. Olsen, R. S. Yant.
Concrete Construction and Supply Co., Columbia, S. C.—O. S. Smith.
Concrete Transport Mixer Co., St. Louis, Mo.—F. H. Fleming.
Consolidated Rock Products Co., Los Angeles, Calif.—F. Gautier.
Construction Materials Co., St. Louis, Mo.—E. G. Asche.
Cooper Supply Co., Detroit, Mich.—G. W. Cooper.
Erie Materials Co., Fort Wayne, Ind.—A. B. Johnson.
Fischer Lime and Cement Co., Memphis, Tenn.—J. D. Moran.
Fort Worth Sand and Gravel Co., Fort Worth, Texas—W. R. Thomas.
General Electric Co., Schenectady, N. Y.—L. W. Shugg.
General Material Co., St. Louis, Mo.—H. F. Thomson.
Graham Brothers, Inc., Los Angeles, Calif.—H. F. G. Pelsue.
Guaranteed Concrete Co., St. Paul, Minn.—J. L. Shiely.
Harnischfeger Corp., Milwaukee, Wis.—E. C. Meyer.
T. L. Herbert and Sons, Nashville, Tenn.—O. H. Hansard.
Houston Building Material Co., Houston, Texas—A. S. Koehler, L. H. Meyer, R. W. Rogers.
Hunkins-Willis Co., St. Louis, Mo.—E. D. Hunkins.
Hunterspoint Lumber and Supply Co., Inc., L. I., N. Y.—W. E. Code.
Interlake Quarries, Ltd., Montreal, Quebec, Can—D. V. Robertson.
Jaeger Machine Co., Columbus, Ohio—Lion Gardiner.
Jahncke Service, Inc., New Orleans, La.—H. Jahncke.
Keystone Sand Supply Co., Pittsburgh, Penn.—W. A. Bliss.
Koehring Co., Milwaukee, Wis.—E. J. Goes, W. B. Elliott.
Koenig Coal and Supply Co., Detroit, Mich.—A. J. O'Connor.
Lehigh Portland Cement Co., Allentown, Penn.—H. B. Springer.
Lima Locomotive Works, Inc., Lima, Ohio—Roy Wills.
Maloney Concrete Co., Washington, D. C.—C. P. Maloney.
Marquette Cement Manufacturing Co., Chicago, Ill.—G. E. Davis, J. C. Griswold, J. I. Springfield.
E. B. Metzer, Detroit, Mich.—E. A. Biederman, E. B. Metzen.
National Cement Co., Birmingham, Ala.—A. M. Yager.
National Ready Mixed Concrete Association, Washington, D. C.—V. P. Ahearn, Stanton Walker.
Northern Quarries, Ltd., Montreal, Quebec, Can.—A. G. Robertson.
Ontario Ready Mix Concrete, Ltd., Toronto, Ont., Canada—R. B. Young.
Ready Mixed Concrete Association of Metropolitan Pittsburgh, Pittsburgh, Penn.—R. V. Warren.
Ready Mixed Concrete Corp., Indianapolis, Ind.—E. B. Rayburn, Jr.
Ready Mixed Concrete Co., Denver, Colo.—L. S. Brannan.
Ready Mixed Corp., Dayton, Ohio—A. W. Kimmel.
John A. Roebling's Sons Co., Trenton, N. J.—J. P. Berger, D. M. Moser.
Sloss Sheffield Steel and Iron Co.,, Birmingham, Ala.—J. E. Donelson.
Tews Lime and Cement Co., Milwaukee, Wis.—W. P. Bliffert, W. F. Tews.
The Thew Shovel Co., Lorain, Ohio—M. B. Garber.
Transit Concrete, Ltd., Oakland, Calif.—C. Stephens.
Transit Mix Concrete Co., New York, N. Y.—J. H. Dixey.
Universal Atlas Cement Co., Chicago, Ill.—H. G. Farmer, J. C. Meacham, E. Quebbeman.
Warner Co., Philadelphia, Penn.—Alex. Foster, Jr., Irving Warner.

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No concrete units have ever been received with so much enthusiasm by builders and architects as the new Besser made units with Fully Pressed Tops. They have opened up new and bigger markets in the higher class construction fields. Yet, they cost no more. In fact, the greater refinements, plus automatic offbearing, in the New Besser Plain Pallet Strippers have made production even more economical than ever. Further improved quality is secured by the new *Nine Bar Tamper* which distributes the tamping equally to all sections of the block and gives even density throughout.

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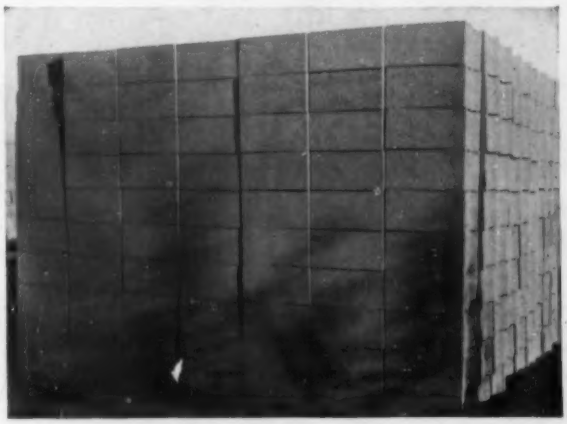
Once a Besser Plain Pallet Stripper is installed there is never any further investment in pallets to make more or different sizes of units. More than twice the cost of the machine has been saved in scores of plants on pallet cost—and there are other economy advantages too! Manufacturing concrete products never before offered so much assurance of prosperity as it does now to owners of Besser Plain Pallet Strippers.

BESSER MANUFACTURING CO.

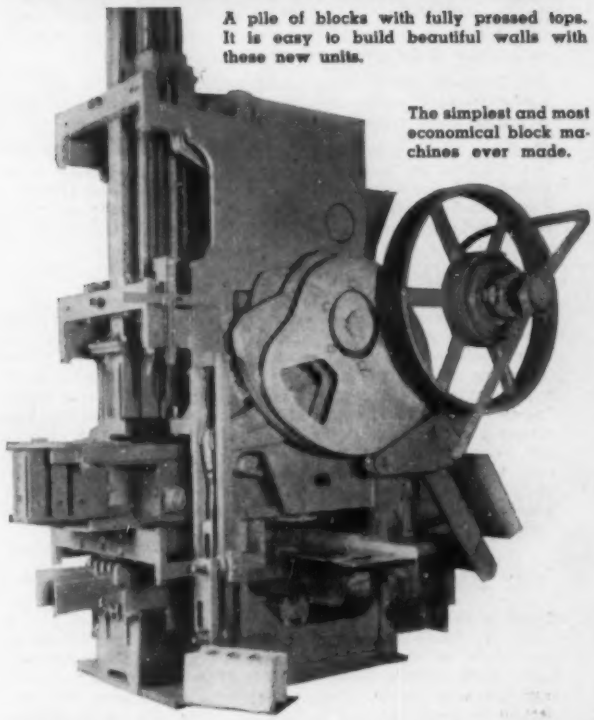
COMPLETE EQUIPMENT FOR CONCRETE PRODUCTS PLANTS

Complete Sales and Service on BESSER, ANCHOR, CONSOLIDATED, IDEAL, HOBBS, UNIVERSAL, PORTLAND

201 37TH STREET ALPENA, MICHIGAN



A pile of blocks with fully pressed tops. It is easy to build beautiful walls with these new units.



The simplest and most economical block machines ever made.

BESSER PLAIN PALLET STRIPPERS

FULLY AUTOMATIC—3 Models—Capacities: 2000 to 4000 units per day.
SEMI-AUTOMATIC—4 Models—Capacities: 1000 to 2000 units per day.
POWER OPERATED with
Hand Controls—2 Models—Capacities: 500 to 1000 units per day.
MULTI-MOLD
Hand Operated—Capacity: up to 300 units per day. For manhole blocks, slabs and small cored units.
AUTOMATIC BRICK MACHINES—Capacities from 10,000 to 50,000 units per day. For brick, slabs, coal cubes and other small units.

You are invited to see a Besser Plain Pallet Stripper in operation at the Concrete Industries Exposition, Sherman Hotel, Chicago, January 18, 19, 20, 1937.

EVERY CONCRETE PRODUCTS PLANT NEEDS A BESSER PLAIN PALLET STRIPPER

The Advantages of Cored Pallets

Cored pallets are either steel or cast iron. Plain pallets may be either wood or steel. They're generally steel because even the proponents of plain pallets do not usually recommend wood, due to their comparatively short life.

The use of cored pallets has certain important advantages that should be carefully considered by every block manufacturer before he makes an investment in plant and plant equipment.

Better Blocks

Blocks made on cored pallets are better blocks because they are more uniformly cured. This is due to the free circulation of the curing atmosphere through the core openings. Such blocks are cheaper to cure because they are more quickly cured. One of the largest concrete plants in the world recently—after intelligent investigation—installed cored pallet equipment, primarily on account of the quick and more uniform curing.

Cored pallets permit use of machines which leave no core bar marks or weak places beneath core bars either on faces, ends of corner block, or webs.

(Contrary to the impression of many, the user of cored pallets is not limited as to range of core sizes. He simply buys cored pallets with the maximum conceivable air space and then produces blocks with any specified smaller air space by using shouldered cores.)

Lighter Pallets

Cored pallets are lighter in weight. An 8x16" pressed steel cored pallet weighs three and one-half pounds. A cast iron cored pallet of the same size, six pounds. A plain steel pallet (assuming that a pallet ¼" thick is heavy enough) weighs approximately seventeen pounds. For each block that is manufactured, the pallet must be handled at least four times. This means that in one day's production of two thousand 8" blocks the plain pallet user handles approximately 108,000 pounds more pallet weight than the cored pressed steel pallet user and 88,000 pounds more pallet weight than the cored cast iron pallet user. (Or equivalent in human effort to handling two carloads of material—*every day!*)

Ashlar Blocks

Cored pallets permit easier and better production of ashlar units. Machines using cored pallets permit making blocks of any height up to their normal maximum height. The additional parts required do not cost over $10.00 and can be applied in less than one minute. Plain pallet machines require for each change in height of unit an entirely new attachment costing from $200.00 to $500.00.

Header Blocks

Cored pallets permit easier and better production of header blocks. Header blocks are produced without altering or adding to the pallets. This is exceedingly important, for when header blocks are used on a job it usually requires the same number of header blocks as plain blocks.

More Economical Curing

Cored pallets not only mean *better* curing but they result in quicker curing, which cuts costs, and, because more blocks can be put on the rack or car, kiln capacity is increased. That's an economy, too.

Less Breakage

Cored pallets are stiffer. Warped pallets break blocks.

Lower Maintenance Cost

Cored pallets are cheaper to clean and oil. And in the case of cast iron cored pallets, rust is not a factor.

Price Protection

There is no alleged monopoly in the manufacture of cored pallet machines. Competition on this type of machine provides price protection for buyers.

Lower Investment

Equipment using cored pallets is simple in construction. Operating costs are low. Production per man per day is as great or greater than on machines of any other type.

Investment is lower, because

(a) Original machinery cost is lower.

(b) No additional mold boxes are required for various heights of units.

(c) Cost of attachments for different widths or lengths of units is enough less than corresponding attachments on plain pallet machines, in many cases, to pay for the additional pallets required.

(d) The life of pallets is determined to a large degree by the number of times they are used which means that the purchase of additional sizes of pallets is not extra expense.

Finally

Where more than one machine is operated, different machines are used for making different sizes. Under such conditions, with cored pallet machines, the total number of pallets required in a plant may be less than in the case of plain pallet equipment. The first cost of the pallets is less. Flexibility of production is increased. Time required for change-over of sizes is minimized.

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Adrian, Michigan

COMMERCIAL SHEARING & STAMPING CO.
Youngstown, Ohio

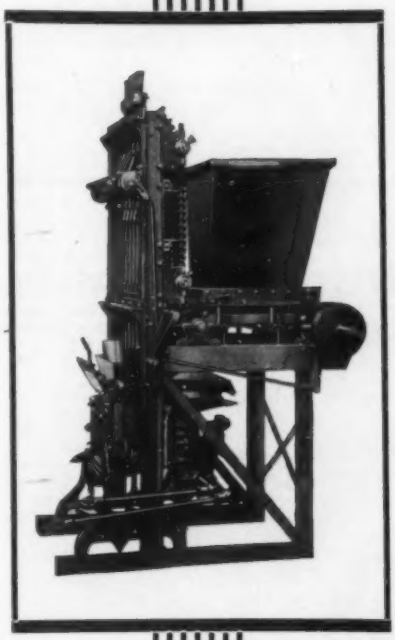
MILES MANUFACTURING CO.
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CONCRETE EQUIPMENT



GET SET FOR 1937 •

You can have definite, profitable results at lowest operating costs in the making of the perfect, uniform, quality blocks that have the appeal so necessary to volume sales.

Concrete Products plants in all parts of the world are now depending upon MILES Equipment for consistently good profits. The name MILES has for many years been the safeguard of Concrete Products Manufacturers who through long experience with MILES Equipment have found it absolutely dependable and capable of producing at lowest cost the types of block in greatest demand.

The NEW MILES MULTIPLE UNIT MACHINE saves two-thirds of the manufacturing and laying of RANDOM ASHLAR BLOCK. This machine can be had in both hand and power operated types. Write for catalogs and complete data today.

THE MILES MANUFACTURING CO.

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Will not fade—extra fine and strong
TAMMS SILICA COMPANY
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STAR and ANCHOR COLORS
Geo. S. Mepham Corp., East St. Louis, Ill.
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SPARKLING MARBLE
SPARKLING GRANITE
All colors—all sizes
TAMMS SILICA COMPANY
228 North La Salle Street Chicago, Illinois

Concrete Brick

THE NU-CARTH STONE CO., Carthage, Mo., has recently branched out into the brick making field and is manufacturing pressed brick from gravel, limestone, cement and coloring matter. The brick are made by automatic machinery and are steam cured.

Recessed Block

JOSEPH BOCCHINO, Utica, N. Y., is manufacturing concrete blocks by a new process for which he holds a patent. An important feature is a recess in the block to facilitate handling.

Cast Stone Institute to Meet in Chicago

THE Cast Stone Institute will hold its annual convention at the Bismarck hotel, January 18 and 19, during Chicago's big concrete week. There are no scheduled papers to be offered, both days being turned over to discussions of subjects pertinent to the industry.

The following program has been arranged:

Private exhibition of new products and processes.

Demonstration of vacuum molding of cast stone.

Demonstration of application of colored aggregate to cast stone.

Inspection of local cast stone plants.

Report on field survey of joints and pointing on cast stone jobs in 20 cities.

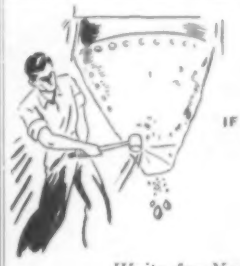
Explanation and discussion of laboratory tests now under way on pointing materials for cast stone.

Symposium on technical problems in the manufacture and use of cast stone.

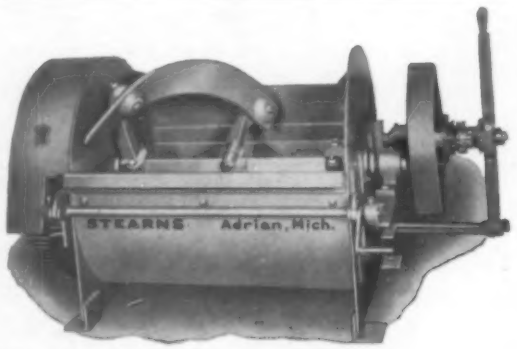
Talk on the application of high pressure steam curing to cast stone.

Report on a 75-day inspection of cast stone and monolithic concrete structures in Europe.

Frank and impartial diagnosis and prescription for the major ills of the cast stone industry.



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Will Flow Freely
IF YOU EQUIP THEM WITH THE RIGHT SIZE
SYNTRON
PULSATING ELECTRO-MAGNET
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Write for New Complete 1937 Catalogue
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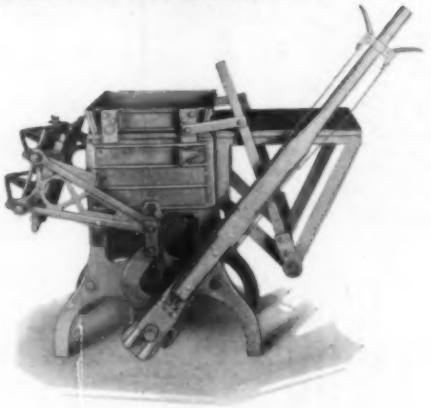


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Low for charging—discharge door controlled *from the operator's side* and locks tight without any tricky device—mixes fast and thoroughly—built in 3-12-18-28 and 42 cu. ft. sizes. Write for folder.

STEARNS MANUFACTURING COMPANY, Adrian, Mich.
Eugene F. Olsen, General Manager
Ask also about Stearns Power Stripper, Stearns Multiple Bar Tampers, and guaranteed repair parts for Ideal Mixers and Anchor, Ideal, Universal and Hobbs Block Machines

There Is a Difference . . . You Can See It in the Quality of Your Products . . .



16 MODELS to choose from in hand or power. For blocks, tile, flue block, or backup units. Stop at Booths 48-49 at the Chicago Concrete Exposition and let us show you how to improve your products.

The Multiplex Concrete Machinery Co.
Elmore, Ohio

New Incorporations

Sweet Rock & Sand Co., Inc., Miami, Fla.; 1000 shares, $5 par value. Incorporators are T. T. Sweet, H. G. Sweet and L. W. Botts.

E. A. Mundt Granite Co., Marinette, Wis.; to deal in granite, stone and other materials; 2000 shares at $10 each. Incorporators are E. A. Mundt, L. R. Mundt and Mrs. E. A. Mundt.

Interstate Graphite Co., Inc., 2026 West 21st St., Chicago, Ill.; 100 shares, no par value, common. Incorporators are J. Twarzik, F. V. Macaluso and S. S. Jasinski.

Commercial Rock Co., Inc., Ontario, Ore.; to deal in rock products and aggregates; capital stock $20,000. Incorporators are George B. Henly, Lillian G. Henly and Chester A. Embree.

Concrete Products Corp., Humboldt, Iowa; authorized capital stock $25,000, divided into 250 shares of $100 each. Incorporators are D. C. Pierson, R. E. Arthur, E. L. Arthur, Mrs. C. H. Wilson and C. F. Wilson.

Personals

A. C. Wilby, for many years assistant to president of the Universal Atlas Cement Co., has been appointed by Carnegie-Illinois Steel Corp. as manager of public relations for the Chicago, Ill., district.

W. J. Brown of the Pennsylvania-Dixie Cement Corp., has been elected president of the Chattanooga (Tenn.) Engineers' Club for 1937.

Ezekiel Davidson, managing director of the Pretoria, South Africa, Portland Cement Co., is expected to return soon to live in Cleveland, Ohio. He recently purchased the Grennan estate of 89 acres in Gates Mills and an apartment building in Cleveland.

F. T. ("Tip") Brown, district sales manager of the Lehigh Portland Cement Co. at Kansas City, Mo., was recently chosen to fill a vacancy as a director of the Missouri State Chamber of Commerce.

Charles U. Browniee has been appointed district sales manager for the Lone Star Cement Corp. in Nebraska, Iowa, Kansas, Missouri, Oklahoma and Arkansas, with headquarters at Kansas City, Mo. He has been with the organization for 6½ years.

E. K. ("Dutch") McGrath, formerly connected with the Dixie Concrete Products Co. and the Pennsylvania-Dixie Cement Corp., has purchased an interest in the T. T. Wilson Co., Chattanooga, Tenn. **L. H. Godfrey**, formerly associated with Universal Atlas Cement Corp., is president of T. T. Wilson Co., which deals in coal, coke and building supplies.

L. W. Shugg, division manager, publicity department, General Electric Co., Schenectady, N. Y., was elected president of the Exhibitors' Advisory Council, Inc., at the recent annual directors' meeting in New York City.

Obituaries

Alfred F. Cooke, president of Schaffer Poidometer Co., Pittsburgh, Penn., died November 27, as the result of an automobile accident November 25.

Thomas A. Nelson, 66, of Nelson-Rising Slate Co., Grandville, N. Y., died November 21. He had been in the slate business for 30 years.

Andrew C. O'Laughlin, 64, recently retired president of the Consumers Co., Chicago, Ill., died December 4 at Phoenix, Ariz. He had been in ill health since November, 1935. Mr. O'Laughlin had been identified with the stone and building business in Chicago for more than 40 years, and for many years headed the A. C. O'Laughlin Co., a stone products firm, and the Central Lime and Cement Co. In 1929 these companies and the Wisconsin Lime and Cement Co. were consolidated with the Consumers Co. and Mr. O'Laughlin became president of the latter concern.

Dr. Richard Vanselous Mattisson, 85, one-time millionaire "asbestos king" and president of Keasbey & Mattison Co., Ambler, Penn., died November 18. He was president of Bell Asbestos Mines of Quebec and of Asbestos Shingle, Slate and Sheathing Co., and of other firms. He received an M.D. degree from the University of Pennsylvania in 1875.

Thomas Bishop, 69, founder of the Bishop Brothers' granite firm of Quincy, Mass., died December 2 after a long illness. He was a member of the Granite Manufacturers' Association, of which he was a former president.

John Walter Stull, 66, president of the Liberty Limestone Corp., Rocky Point, Va., was killed December 3 when a freight train impaled his truck at a grade crossing near his home in Buchanan, Va. He was a director of the Alleghany Slag By-Products Co. and was prominent in several other organizations.

Walter Leslie Stine, 48, contractor, Marysville, Calif., died following a heart attack November 19. He had handled several important rock and sand contracts and expected to open an extensive plant in Hallwood district to crush rocks tossed aside by gold dredgers and to dig sand in the dredger vicinity.

Joe Neeley, 30, of the Cumberland River Sand Co., Clarksville, Tenn., was killed December 6 in an automobile accident near Springfield, Tenn.

John L. Goss, president and founder of the John L. Goss Corp., operators of granite quarries at Stonington, Maine, died December 9 following a brief illness.

Carl A. Simon, for a number of years a representative of the Ash Grove Lime and Cement Co., at Dodge City, Kan., died at the home of his brother at Avilla, Ind., December 4. He was an active citizen of Dodge City and, among his other activities, was for a time a director of the housing project at Wilroads.

Gordon Willis, 77, former president and for the last six years chairman of the board of Hunkins-Willis Lime and Cement Co., St. Louis, Mo., died November 16. In 1889 he had become secretary of the Thorn & Hunkins Lime and Cement Co., and in 1896 it was succeeded by the company of which Mr. Willis was president until 1930, when he resigned to become chairman of the board. He was a former president of the National Builders' Supply Association and a director of the National Lime Association.

Walter J. Edmonds, 47, executive vice-president and a member of the board of the International General Electric Co., died suddenly of a heart attack December 17 at his home in Scarsdale, N. Y. His association with the company dated from 1919.

Sidney P. Armsby, well known figure in the lime industry and formerly associated with Haden Lime Co., Houston, Texas, died recently at Cumberland, Md.

Crushed Stone

Keosauqua, Iowa: A Farm Bureau soils committee rock quarry has been opened on the F. S. Elliott farm east of town with WPA labor. Agricultural limestone is being produced for Van Buren county farmers.

Ft. Madison, Iowa: Stone crushing was begun December 1 at the new Lee county quarry in Franklin township preparatory to surfacing graded secondary roads as a WPA project. The crusher in use was moved from Marion township.

Independence, Iowa: A WPA project for Buchanan county was approved early in December for quarrying, crushing and dis-

Dependable



Actual results on the job—day after day—are what count. Frequent and unexpected wire rope failures not only slow down production, but they also increase operating expense.

You can depend on "HERCULES" (Red-Strand) Wire Rope to handle, *consistently*, a large yardage for each dollar of its cost. There are definite reasons why this is so, and they involve materials, manufacturing experience, equipment and methods.

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A. LESCHEN & SONS ROPE CO.

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HAISS LOADERS



Have What It Takes

5 yds. a min. Model 135

3 yds. a min. Model 80

2 yds. a min. Model 27

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. . . the strength that comes from simple design, amply heavy structural members, a factor of safety in every part that will withstand a *stalling* overload. Big engines, heavy locomotive - type transmission, manganese chains and sprockets. LOW UPKEEP throughout.

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Who, for over 40 years, have created and sold none but equipment of demonstrable superiority in design and manufacture.

Clamshell Buckets — Portable Conveyors

tributing 35,000 cu. yd. of rock to cover 40 miles of local roads.

Clarinda, Iowa: Operations are continuing at the Peterson quarry near Essex, where already 4500 tons of agricultural limestone has been quarried and crushed under a Soil Conservation Service program.

Seymour, Iowa: The Soil Conservation Service has opened a new quarry in the northeast part of Wayne county.

Guthrie Center, Iowa: A WPA limestone quarry project was begun in Guthrie county December 8 to produce material under the Soil Conservation Service program.

Albia, Iowa: Monroe county purchased its fourth tractor and grader and its third crusher in November. The crusher was put up at the Eddyville quarry, where agricultural limestone is being produced.



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MACHINERY CORPORATION
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Osceola, Iowa: A new limestone crusher was put into operation late in November on the Ab Daniels farm northeast of town to furnish agricultural limestone to Clarke county farmers.

Mt. Pleasant, Iowa: The rock crusher which was used for several months northwest of Mt. Pleasant was moved recently to the former Hill quarry, now owned by George Beattie, east of Salem, and WPA workers have been transferred to the Salem site to crush stone for roads in the vicinity. The stockpile at the quarry northwest of Mt. Pleasant—some 20,000 cu. yd.—will be used on the West Highland road and on the north Olds-Winfield road.

Waterloo, Iowa: The Black Hawk county board of supervisors recently leased a rock quarry in Poyner township from Mrs. R. G. Holm for 15 years at $1000. The rock is to be used for road purposes.

Greenfield, Iowa: Adair county is operating the Dixon quarry to supply rock for county trunk roads and city streets in Stuart and Greenfield.

Southwest Construction Co., Red Oak, Iowa, Jay Campbell, president, has launched a coöperative venture at the rock quarry near Stennett and plans to employ 30 to 40 men during the winter. He will employ the men at $2.50 a day—$1.00 payable at the close of each day, and $1.50 a day balance due them at the time the rock is sold.

Elliott, Iowa: Montgomery County Soils Conservation Board has made plans for crushing agricultural limestone in the Gammel quarry north of Red Oak.

Westmoreland, Kan.: The WPA project has rented a gyratory rock crusher to produce material for street surfacing.

Burlington, Kan.: Coffey county is operating quarries at the B. D. Harreld farm on US75; at W.H. Kahnt pasture east of town; at the A. W. Crawford farm near Agricola, where the Pleasant township rock crusher has been erected; and on the Tracy Horton farm east of Lebo. Road material is being produced.

Papillion, Neb.: The rock crusher has been moved from the Dyson Hollow quarry west of LaPlatte to the Clark quarry south of Gretna, and road material is being produced.

Lincoln, Neb.: WPA quarries in the 17 counties comprising the Lincoln WPA district are quarrying enough rock and gravel to surface 4 2/3 miles of road a day, according to District Director Carnahan. Quarries are operating in Cass, Otoe, Nemaha, Richardson, Gage, Jefferson, Lancaster, Johnson and Pawnee counties. Gravel pits are being operated in Jefferson, Thayer, Fillmore, York, Polk, Butler and Saunders counties.

Memphis, Mo.: The Soil Conservation Service plans to open the limestone quarry recently leased by Scotland County Soil Conservation Association under WPA. A 7-ton crusher has been secured for the work.

Princeton, Mo.: Mercer County Soil Conservation Association has opened a quarry and has leased a crusher.

Coy Rock Works, Lockwood, Mo., recently moved one of its crushers to the Benton Wilson farm near Greenfield and has a contract to crush 700 tons of 10-mesh limestone for the several Wilson farms in Dade county.

Agricultural limestone is being produced under soil conservation or farmers' services at the following Missouri points: in Lincoln county on the Knox farm, south of Elsberry; at the quarry on the road south of New Truxton near Warrenton; in Putnam county near Unionville; at Mandeville and Welborne quarries near Hale in Carroll county; at several sites in Cooper county; and at Sugar Creek township near Gilman city in Harrison county.

London, Ky.: Laurel county has purchased a portable rock crusher. The Kentucky state department of rural roads will pay for the crusher on a rental basis while using it to surface roads in the county.

New London, Wis.: The price of agricultural limestone was advanced 15c per ton December 1 at the New London and the Readfield quarries, making the price to farmers 75c a ton. Marl sells for 15c a cu. yd.

The Murray (Ky.) Chamber of Commerce is sponsoring a quarrying project in Calloway county in coöperation with CCC and other agencies. Agricultural limestone is being produced.

Morganton, N. C.: The town's rock crushing outfit was moved to the D. J. Berry quarry on Hunting creek east of Morganton and is producing gravel for street improvements.

Austin, Minn.: A rock crushing project at the quarry near Grand Meadow was started November 30 by WPA.

Canton, N. Y.: A stone crushing plant is contemplated for Canton to provide work for persons on relief.

Platteville, Wis.: The Grant county WPA agricultural limestone project for the winter was started in November at Little Grant, Wis.

Spickard, Mo.: The rock quarry from which WPA workers took rock for city streets was closed late in November.

Sand and Gravel

Alton, Iowa: The board of supervisors purchased a 2-acre gravel pit north of town December 8 from John H. Bloemendaal for $1400, with a 12-year lease and road rights to the pit. The board is preparing to inaugurate a road graveling program this winter.

Waterloo, Iowa: The board of supervisors has leased two gravel pits in Black Hawk county—one from Frank W. Androf for 1¼ acres northwest of Hudson for $1000, and another from J. C. Felts for 1.72 acres in Barclay township near Jesup for 20 years for $688. A road surfacing program is contemplated.

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MALACCA Abrasive Plastic Rubber stops wear—prevents further damage and prolongs the life of **conveyor belts.** A MALACCA repair job preserves the fabric plies—a few cents saves dollars—a few dollars may save thousands. Easily applied by anyone. Trial costs very little—saves much. Unit No. 3—25 lbs. complete with primers and tools will maintain most belts for months. Write for facts.

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Original Rubber
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2,496,000 CUBIC YARDS!

SAND, clay, boulders, roots and phosphate rock — all are sucked up like soda through a straw by the 12" Goodyear Style M Suction Hose here photographed. In its three years' service in a southern phosphate pit it has handled 2,496,000 cubic yards of this highly abrasive sludge — *more than twice the yardage handled by any other make of suction hose used in this mine.* And it is still far from being worn out!

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That is typical of the extra service you get from all Goodyear Mechanical Rubber Goods — sand and water suction hose, jetting hose, dredging sleeves; transmission, elevator and conveyor belting — because all are individually specified to their job by the G. T. M.—Goodyear Technical Man. This friendly expert listens to your problems; his on-the-ground analysis of your need enables Goodyear to employ its vast experience in compounding rubber to build you a "made-to-order" product. What that means in lower replacement and maintenance expense, in lower operating costs, is well indicated by the amazing record quoted above.

To bring the G. T. M. to your office, drop a line to Goodyear, Akron, Ohio, or Los Angeles, California — or the nearest Goodyear Mechanical Rubber Goods Distributor.

THERE'S A GOODYEAR BATTERY NOW!

GTM Specified
GOODYEAR STYLE M SUCTION HOSE
for heavy duty, made in all sizes—length up to 50 feet

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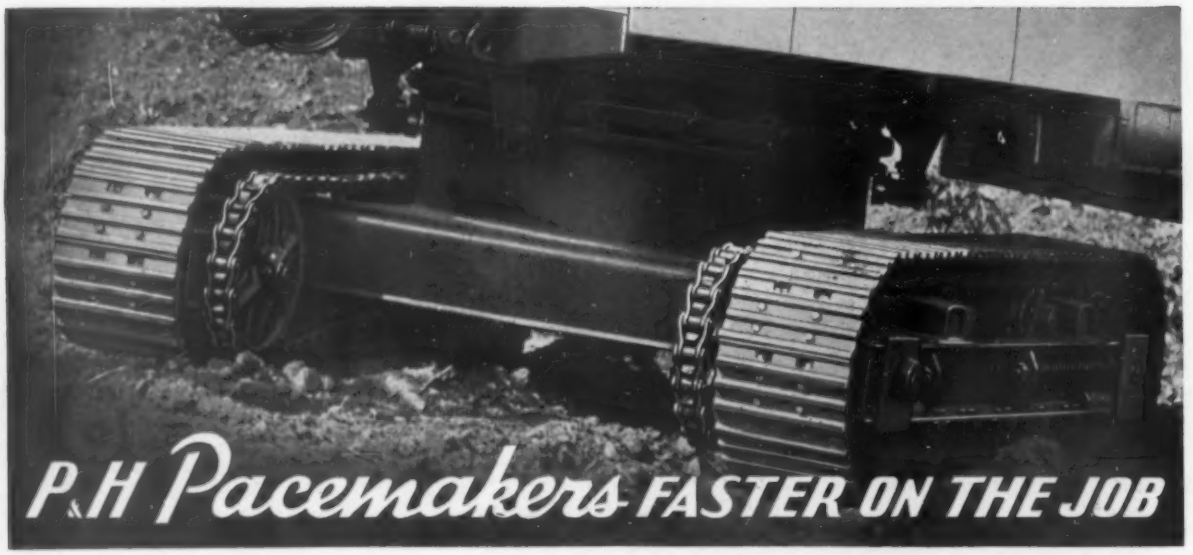
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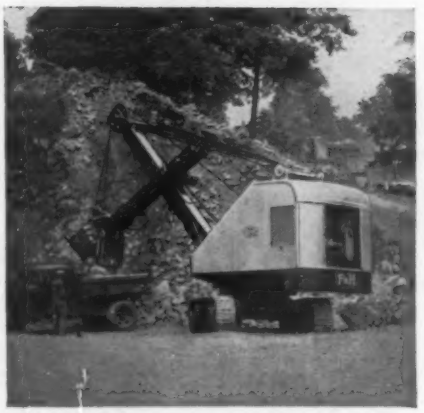
"The whole industry will have to come to all welded construction to keep up with these P&H Pacemakers." — Frank Pakiz, shovel operator.

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OF PROVED TRAVEL MILES BEHIND THESE TRACTOR TYPE CRAWLERS



The P&H Pacemakers are the first and only machines equipped with these tractor type crawlers. Here's an assembly that's *built* for travel—*hard travel*—not mere browsing. Hinge action shoes of tough heat-treated alloy steels take it over the ground with true rolling movement—with freedom from breakdowns wherever you go. This type of crawler has proved itself in literally millions of miles of tractor service . . . it's only one of the many important advancements that make these P&H Pacemakers faster on the job.



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• FOR EVERY NEED •

In the list below of grinding and pulverizing machinery that we manufacture there is a machine which will meet the requirements for the reduction of your materials.

KOMINUTER for straight granulating. **TUBEMILL** for straight pulverizing.

UNIDAN multi-compartment mill, combining granulating and pulverizing.

UNIKOM multi-compartment mill with overhung preliminary grinding chamber, combining granulating and pulverizing.

TIRAX multi-compartment air swept mill for drying, granulating and pulverizing coal, etc.

ATOX air swept high speed, vertical shaft, pulverizer.

● If your problem is wet grinding or dry grinding—open or closed circuit—gravity discharge or air swept—combined drying and grinding—direct firing or bin system—one of the machines above will meet the requirements either alone or in conjunction with our separators or classifiers, so that practically every condition can be met.

● In addition to the above machinery we manufacture also a complete line of accessories for the grinding operation such as air separators and classifiers, Trix wet separator, fans, liners, grinding bodies, spray casings, symetro gear boxes, feeders, conveyors, pumps, dust casings, washmills, etc.

An experience of over 50 years in the grinding of miscellaneous materials is available for the solution of your grinding problem.

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Manufacturers of Cement Making Machinery

225 BROADWAY **NEW YORK, N. Y.**

"GREATEST DISCOVERY in Road Construction in Years"

Means Big New *Profits* for You!

The construction of soil-stabilized secondary roads throughout the country is the recently announced aim of the U. S. Bureau of Public Roads, who consider it "The Greatest Discovery in Road Construction in Years." Most states and counties, too, have scheduled extensive mileages of stabilized road projects. Consequently, hundreds of miles of stabilized roads will be built this year and millions of tons of aggregates will be used in their building.

The simplest, most convenient and best way to build a stabilized road is with uniformly-graded ready-mixed material. Engineers prefer this ready mixed material. In fact, they want it so badly that, unless local producers make plant-mixed material available to them, they will be forced to develop their own pits and erect their own stabilization plants.

Road money spent for stabilization will buy 10 to 20 times as much aggregate as money spent for paving, so stabilization has actually opened the greatest market ever known to aggregates producers.

Now is the time to prepare your plant. Only a small investment is required—you already have much of the equipment needed. You'll get the greatest dividends you've ever received—this year and each succeeding year. For stabilization is here to stay!

The companies listed below are ready and anxious to help you get started. Write today for detailed information.

Markets Aplenty



For City Streets



Rural Roads



Park and Private Drives



Factory and Public Parking Areas and every other place where a firm, dustless, all weather surface is desirable

Calcium Chloride Association

The Dow Chemical Company . . . . Midland, Michigan
Solvay Sales Corporation . 40 Rector St., New York City
The Columbia Alkali Corporation . . . Barberton, Ohio
Michigan Alkali Company . 60 E. 42nd St., New York City

CALCIUM CHLORIDE

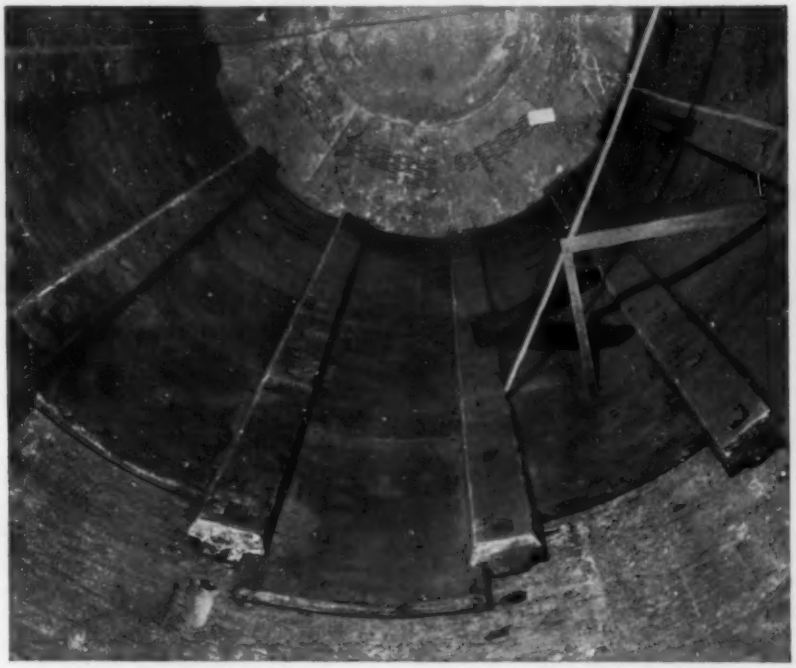
FOR STABILIZING ROAD SURFACES



Cuts Grinding Costs

THE LORAIN ROLLED STEEL PLATE LINING

A new lining for ball, tube, and compartment tube mills that cuts initial cost — lengthens life — makes replacements easier, less expensive.



IN the present types of ball and tube mills for cement and metal grinding, the life of the cast liner is measured in terms of wear on the lifting bar. Once the risers are worn down enough to impair grinding, the *whole plate* must be discarded.

Now, for the first time, the Lorain Rolled Steel Plate Lining, capitalizing on the adaptability and lighter weight of rolled steel, makes available an improved lining plate with a self-wedged lifting bar that is reversible and renewable. Lifts or risers can be renewed without unnecessary scrapping of the body section. Thus, replacement costs are cut; grinding efficiency maintained.

Complete information on the Lorain Rolled Steel Plate Lining is available in a folder entitled "Ten Facts About The New Lorain Rolled Steel Plate Lining." This folder contains photographs, drawings and facts showing how this new construction can be profitable to you. The folder will be sent to you on request. Send now for your copy.

Carnegie-Illinois Steel Corporation,
Lorain Division,
Johnstown, Pennsylvania
Gentlemen:
Please send a copy of the folder entitled "Ten Facts About The New Lorain Rolled Steel Plate Lining."

Name.....

Address.....

CARNEGIE-ILLINOIS STEEL CORPORATION

Lorain Division
Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

Johnstown, Pa.
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL



CONSIDER YOUR NIPPING COSTS



Nipping is a heavy contributor to high drilling costs where forged steel is used.

Timken Bits cut nipping costs to the bone due to (1) the tremendous saving in bulk and weight and (2) the increased footage obtainable from each bit.

The drillers can carry sufficient Timken Bits with them to last an entire shift and never lose drilling time through having to wait for steel. Tramming is practically eliminated.

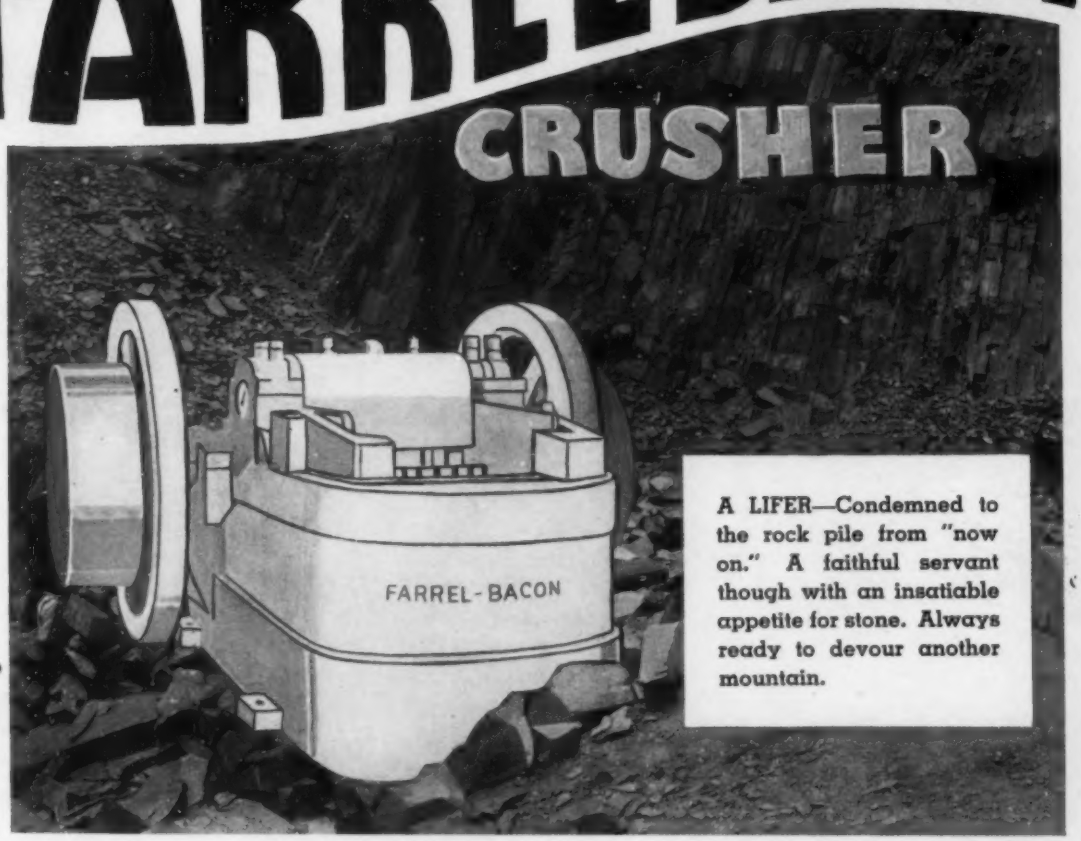
When you consider nipping economy in conjunction with all of the other advantages of Timken Bits you must realize that you can not afford to continue using forged steel.



THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN BITS

FARREL-BACON CRUSHER



A LIFER—Condemned to the rock pile from "now on." A faithful servant though with an insatiable appetite for stone. Always ready to devour another mountain.

A MOST PROFITABLE INVESTMENT

Where the crushing is toughest you'll find a Farrel—Regardless of whether it is new or thirty years in service, it will do the job every day, all day, year after year. These tough, rugged Crushers, backed by fifty-seven years of actual experience, will outlast a lifetime!

Foresighted operators know that investment in expert knowledge of design and equipment earns greatest dividends. Today many of the foremost operators of the rock products industry have insured their success by utilizing Bacon engineering service and Bacon quarry equipment.

BACON SUPPLIES THE FOLLOWING EQUIPMENT

Breaker-secondary crushers, Reduction units, Laboratory crushers. Friction type roller screens. Vibrating screens. Belting. Bucket type elevators. Chutes. Complete crushing plants. Conveyors. Crushing rolls. Drives. Feeders. Gears. Screening plants. Scrubbers for sand, ore, and gravel. Speed reducers, etc.

Illustrated Book on Request

EARLE C. BACON *Inc.*

Engineers to the Stone Crushing Industry

17 JOHN ST., NEW YORK, N. Y.



STUMPED

BY A SCREENING PROBLEM?

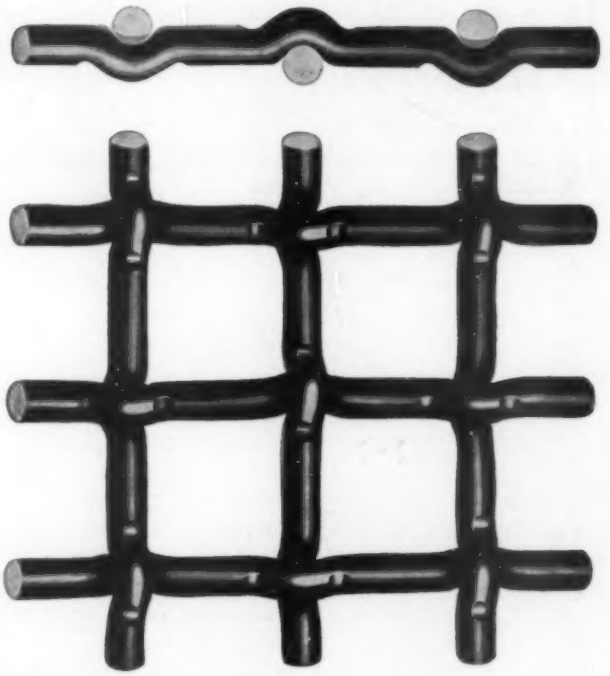
If so...why not take advantage of Roebling's 90 years of wire making experience?

After all...wire screen is wire...wire throughout. It will stand up under the beating of hard service only if the wire itself has the required strength, flexibility, toughness and stamina.

For almost a century Roebling has specialized in the making of wire to meet exceptionally severe requirements as to strength, vibration, and abrasion...wire used in products ranging from giant bridge cables to shovel rope.

Let us cooperate with you. Roebling Wire Screens are available for every sizing, cleaning and grading need.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, N. J. *Branches in Principal Cities*



ROEBLING *Wire Screen*

TRADE JERSEY MARK

90 YEARS OF WIRE MAKING SPELLS THE DIFFERENCE



WILLIAMSPORT, PA. 122 So. Michigan Ave., CHICAGO, ILL.
Other Offices in All Principal Cities



View Showing Back Cover Removed.



Front View Showing Breaker Plate Adjustment.



AMERICAN portable crushing plant reducing "man-size" stone to ¾" aggregate product in one reduction at the rate of 300 tons per day.

AMERICAN

for Greater Tonnage at Lower Cost

Here is a powerful crushing unit capable of withstanding terrific punishment and staying right on the job delivering more tonnage per hour and delivering a better product.

It is designed and built for long trouble-proof service. Every part has been tested for quality, wear and endurance to assure absolute satisfaction in actual service. Here is a crusher that represents maximum value for every dollar invested.

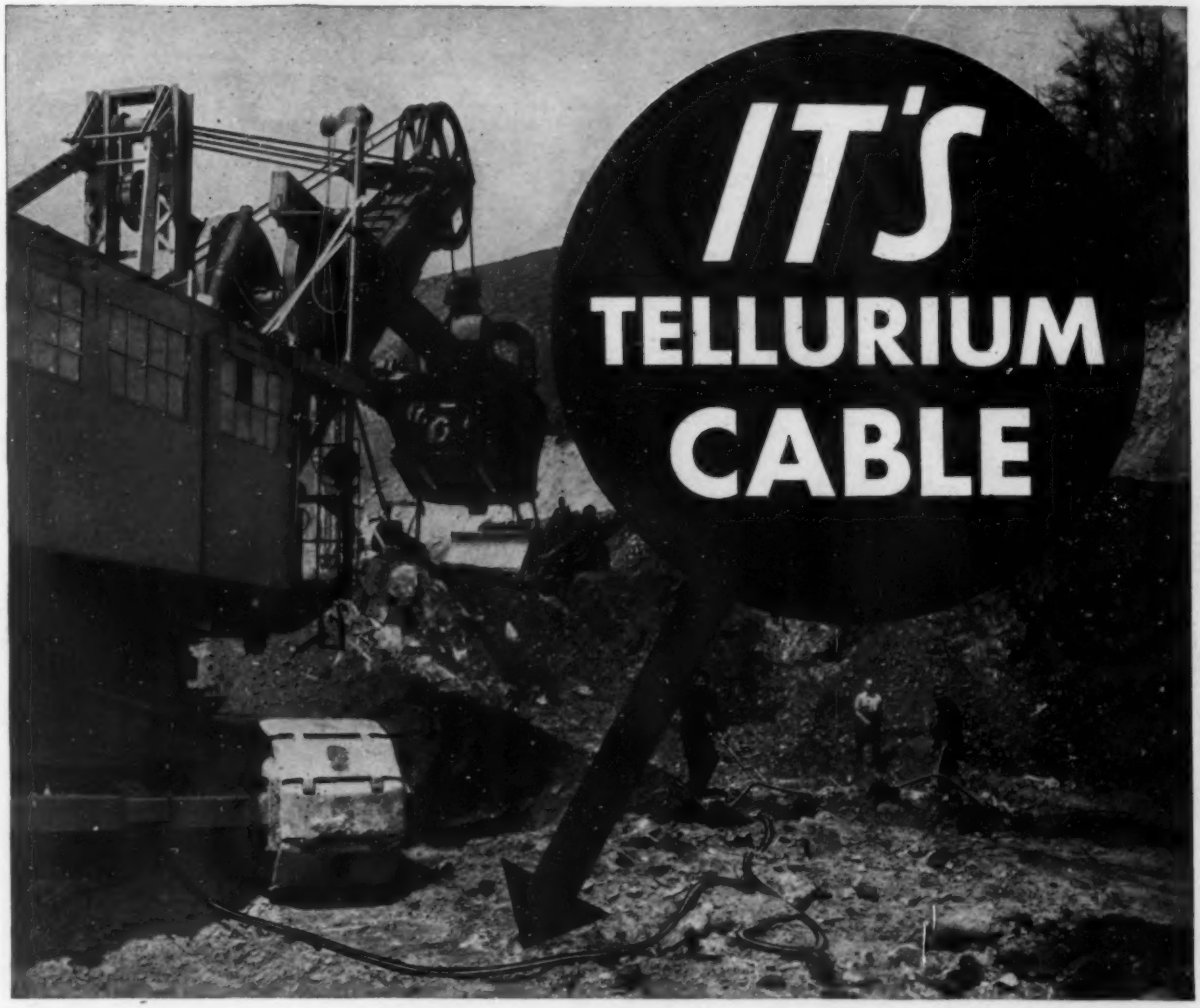
Special Features

Compact Design—Heavy Cast Construction
Cast Steel Adjustable Platten
Cast Steel Discs—Two Inches Thick
Heavy Alloy Steel Shaft
SKF Spherical Roller Bearings
Crushing Chamber Manganese Lined
Lower First Cost—No Slivers or Chips

AMERICAN equipment is backed by over 25 years' experience in designing and manufacturing reduction equipment.

AMERICAN PULVERIZER CO.

1245 MACKLIND AVENUE, ST. LOUIS, MO.



and This Contractor Says . . . "IT'S ALL RIGHT"

THE president of this company*, a large coal-stripping contractor, personally supplied the information about the G-E tellurium-rubber portable cable on his electric shovels.

"Why, yes, it's all right," he said. "Of course, the cable is used under very rough conditions—sharp coal, falling rocks, and what not. Then, I'm afraid the men don't watch it too carefully, and trucks run over it. But, despite everything, that 500-foot piece on the Bucyrus-Erie 120-B is in excellent shape."

The cable referred to, and shown in the picture, is a 5000-volt Type G (three-conductor with ground wires) tellurium-compounded all-rubber cable. The shovel, which has a capacity of 4 cubic yards, is coal-stripping in eastern Pennsylvania.

*Name on request

Give Tellurium a Trial

Naturally, you can expect to get just as good results with G-E tellurium-rubber cable as has this contractor. Try it. The next time you need cable for replacement on your electric shovels, cutters, loaders, or locomotives, call on your G-E jobber. He can supply all types and sizes promptly. For prices and specifications, see Bulletins GEA-1728 and GEA-1918. Address nearest G-E jobber, G-E sales office, or General Electric, Dept. 6E-201, Schenectady, N. Y.

520-81

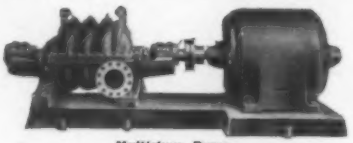
GENERAL ELECTRIC

The MORRIS HYDRAULIC COLUMN

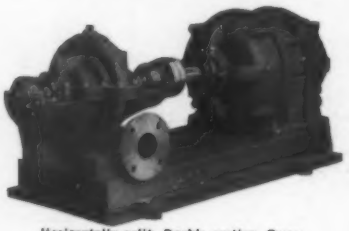
News of interest to Centrifugal Pump Users



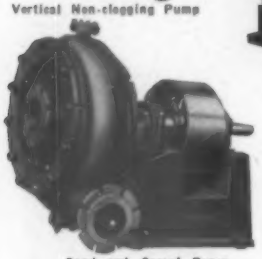
Vertical Non-clogging Pump



Multistage Pump



Horizontally-split Double-suction Pump



Sand and Gravel Pump



Slurry and Sludge Pump

57 Varieties . . . .

This well-known slogan could be used for Morris Pumps. Morris makes a pump for every purpose—for clear water, chemicals, pulpy materials, fine abrasives, sand and gravel. And behind each Morris Pump type is 72 years of pump building—the unequalled experience of the oldest American manufacturer of centrifugal pumps. The results of this experience are shown in the many distinctive Morris features that give you long continued as well as initial high efficiency, low maintenance expense and trouble-free operation. Be sure to ask for a Morris quotation before you buy a centrifugal pump.



An illustrated index of centrifugal pumps . . . .

Here is one bulletin that every user of centrifugal pumps should have. It is a picture book guide to practically every type of centrifugal pump and illustrates a wide range of designs and methods of drive.

Whether you use pumps to handle clear water, chemicals, abrasive mixtures, or pulpy materials, you will find the most modern design for the purpose illustrated in this concise guide book. Your copy sent on request.

For authoritative recommendations on any pumping or dredging problems, write to Morris Machine Works, Baldwinsville, N. Y. Representatives in principal cities

DEMPSTER DUMPSTER



The dump of many uses. The DEMPSTER-DUMPSTER can be mounted on any truck chassis and is furnished complete.

Buckets can be spotted at any desirable point along quarry floor or elsewhere, depending on the job. These are picked up when loaded and dumped at destination while empties are being loaded.

One truck can handle a number of buckets. The hoisting device raises bucket to exact height desired and it is dumped by the Dempster Automatic Hook provided for the purpose, which drops into neutral position when not in use.

No assistance is needed from outside help in completing the cycle after detachable bucket is hooked to the dump—no brakes or clutches are necessary.

The illustration above shows the DEMPSTER-DUMPSTER in use at one of the W. Va. Quarries near Knoxville, Tennessee.

Let us send complete details of DEMPSTER-DUMPSTER and its many uses.

DEMPSTER BROS., INC.

KNOXVILLE, TENN.

Expand Your Market

WITH A-W PORTABLE CRUSHING PLANTS

. . . IT'S *Sound Profit* INSURANCE

Put yourself in line for the desirable business that's beyond the distance range of stationary plants. You can do it economically with A-W Portable Crushing Equipment . . . assuring yourself the extra volume of business to be obtained through contracts now out of reach.

Easily and inexpensively set up near the job, an A-W Portable Plant saves haulage costs . . . Protects present markets . . . Lets you expand . . . Enlarges your sales possibilities. Provides practical mobility in equipment that has the capacity and endurance of equivalent fixed plant crushing machinery.

Each unit is self-contained. Oversize S.K.F. roller bearings and shafts permit the use of larger jaws operating at higher speeds . . . assuring the highest possible output. Compact for easy transportation, A-W Portable Crushers can be set up for operation in a few hours. No elevators to be folded and unfolded . . . no pits to be dug for delivery conveyors or elevators. Mail coupon for full details.

THE AUSTIN-WESTERN ROAD MACHINERY CO.
AURORA, ILLINOIS



Built TO OUTPERFORM!

Austin-Western

The Austin-Western Road Machinery Co., V, Aurora, Ill.

☐ Send a salesman
Tell me more about the

☐ Crushing & Washing Plants	☐ 5-Yd. Scraper
☐ Motor Grader	☐ 12-Yd. Scraper
☐ Roll-A-Plane	☐ Trail Cars
☐ Blade Grader	☐ Shovels and Cranes
☐ Motor Sweeper	☐ Bituminous Distributors
☐ Elevating Graders	☐ Snow Plows

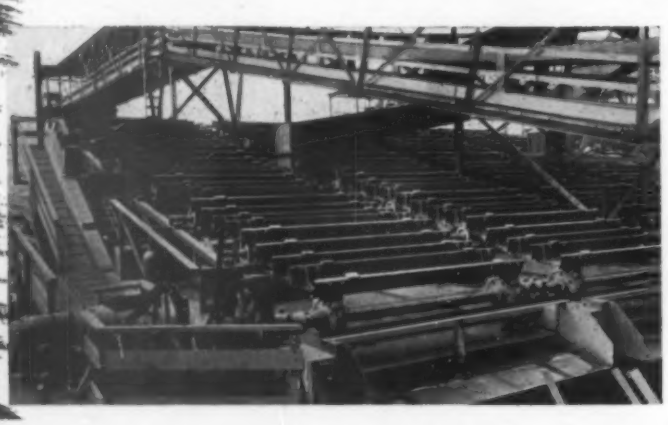
C-704

Name .....

Address .....

City ..... State .....

JEFFREY







Processing and handling equipment bearing the name "JEFFREY" will enable you to meet strictest specifications and assure you genuine dependability, at a cost that is easy on your pocketbook.

Jeffrey equipment and plant engineering cover the entire stone products industry . . . sand and gravel, crushed rock and cement. In this broad equipment line are units and products for standard and special service . . . apron, belt and screw conveyors; bucket elevators, feeders and screens; sand dewaterers, portable conveyors and loaders; products, such as chains, sprockets and conveyor idlers for replacement purposes. A unit or a complete plant.

■

A huge battery of Jeffrey sand dewaterers, eight units arranged in two groups of four. Each group is so provided with jaw clutches that adjacent pairs may be disconnected and one run independent of the other.

These self-contained Jeffrey-Traylor electric vibrating feeders handle aggregate material at 1,250 t.p.h. each.

A mile long Jeffrey 48-in. belt conveyor line connecting plant with storage. One unit in this line is believed to be the longest of its capacity in existence . . . 2,157 ft., 1,200 t.p.h.

STONE PRODUCTS PROCESSING EQUIPMENT

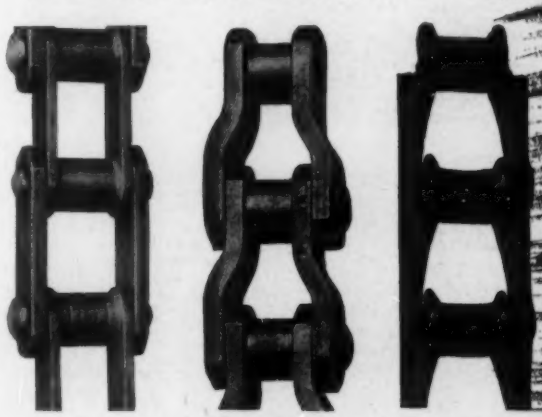


Jeffrey spirals will handle lime, gypsum, cement and other loose material economically.

Electric Vibrating Units

Jeffrey-Traylor electric vibrating units afford a new conception of simplicity, effectiveness and low cost in many operations in your industry . . . feeders for withdrawing from bins to belts . . . screens for scalping, accurate sizing and also closed circuit grinding . . . tubular and pan conveyors for handling clinker . . . constant weight feeding to mills. Any of these can be furnished totally inclosed for dust abatement. Catalog No. 620-P.

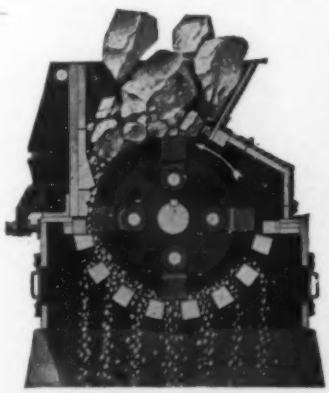
(Patented and Patents Pending)



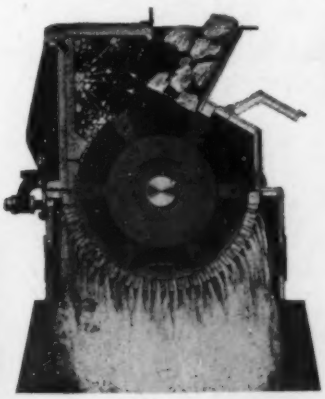
Jeffrey has a complete line of chains for elevating, conveying and drives. Also sprockets and chain attachments.

Also Crushers and Pulverizers

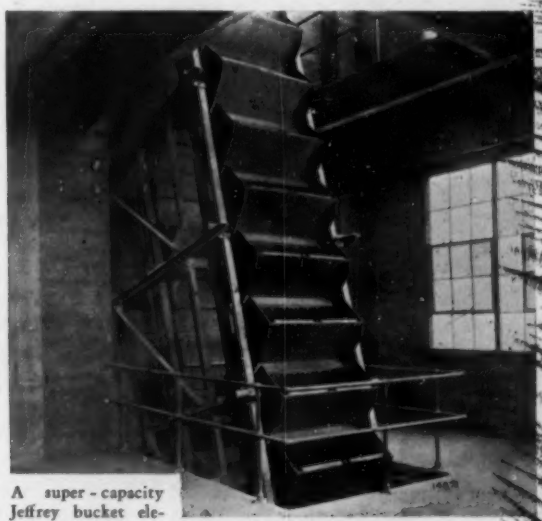
Are you bothered by rejections (below specifications) of your product, when crushed from feed of a slabby or slivery nature? If so, keep in mind that Jeffrey hammermill crushers and pulverizers will avoid such losses . . . giving you the most cubical product, sharpest corners for making the best bond with cement. Catalog No. 550-H.



Jeffrey Miracle Hammer Crusher (Patented)



Jeffrey Type "B" Swing Hammer Pulverizer (Patented)



A super-capacity Jeffrey bucket elevator installed in a large stone quarry.

Classified Directory of Advertisers in this Issue of ROCK PRODUCTS

For alphabetical index, see page 2

Abrasive Wheels
Manhattan Rubber Mfg., Div. of Raybestos - Manhattan, Inc.

Aggregate Admixture
Calcium Chloride Ass'n

Agitators, Thickeners and Slurry Mixers
The Dorr Co.
Hardinge Co., Inc.
F. L. Smidth & Co.

Airveyor
Fuller Co.

Air Compressors
Chicago Pneumatic Tool Co.
Curtis Pneumatic Machy. Co.
Fuller Co.
Ingersoll-Rand Co.
Nordberg Mfg. Co.
F. L. Smidth & Co.
Traylor Engr. & Mfg. Co.

Air Filters
Fuller Co

Air Filter Frames
Air Maze Corp.

Air Separators
Bradley Pulverizer Co.
Hardinge Co., Inc.
Raymond Bros. Impact Pulv. Co.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Applicator Bars
Stulz-Sickles Co.

Automatic Weighers
Merrick Scale Co.
Richardson Scale Co.

Babbitt Metal
Joseph T. Ryerson & Son, Inc.

Backdiggers
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)

Backfillers
Austin-Western Road Machy. Co.
Bucyrus-Erie Co.
Harnischfeger Corp.
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)

Bagging Machinery
Richardson Scale Co.

Balls, Grinding, (See Grinding Balls)

Balls (Tube Mill, etc.)
Allis-Chalmers Mfg. Co.
Hardinge Co., Inc.
F. L. Smidth & Co.

Bar Benders and Cutters
Koehring Co.

Batchers, Measuring Volume
Besser Mfg. Co.
Fuller Company

Bearings
Chain Belt Co.
Link-Belt Co.
Joseph T. Ryerson & Son, Inc
Timken Roller Bearing Co.

Bearings (Anti-Friction)
Timken Roller Bearing Co.

Bearings (Roller)
Timken Roller Bearing Co.

Bearings (Tapered Roller)
Timken Roller Bearing Co.

Bearings (Thrust)
Timken Roller Bearing Co.

Belt Fasteners
Flexible Steel Lacing Co.

Belting
Earl C. Bacon, Inc.
Boston Woven Hose & Rubber Co.
Hewitt Rubber Corp.
Manson Glover
Robins Conveying Belt Co.

Belt Lacing (Steel)
Flexible Steel Lacing Co.

Belting (Elevator and Conveyor)
Boston Woven Hose & Rubber Co.
Manson Glover
B. F. Goodrich Co.
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Belting (Metal, Conveyor, High and Low Temperature)
Wickwire Spencer Steel Co.

Belting (Transmission)
Boston Woven Hose & Rubber Co.
B. F. Goodrich Co.
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Belting (V Type)
B. F. Goodrich Co.

Bin Gates
Allen-Sherman-Hoff Co.
Chain Belt Co.
Fuller Co.
Industrial Brownhoist Corp.
Link-Belt Co.
Sprout, Waldron & Co., Inc.
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.

Bins, Hoppers
Austin-Western Road Machy. Co. (Sand & Gravel)
Besser Mfg. Co.
Blaw-Knox Co.
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.

Bins (Steel)
Pioneer Gravel & Equipment Co.

Blasting Cap Protectors
B. F. Goodrich Co.

Blasting Machines
Atlas Powder Co.

Blasting Supplies
Atlas Powder Co.
Hercules Powder Co.

Blasting Powder (See Powder, Blasting)

Block Machines, Building
Bassett Foundry
Besser Mfg. Co.
Miles Mfg. Co.
Multiplex Concrete Machy. Co.
Stearns Mfg. Co.

Block Machines, Silo
Besser Mfg. Co.

Blocks (Pillow, Roller Bearing)
Link-Belt Co.
Timken Roller Bearing Co.

Blocks (Sheave)
Sayerman Bros.

Bodies (Car & Motor Truck)
Easton Car & Construction Co.

Boilers
Babcock & Wilcox Co.
Combustion Engineering Corp.

Boots and Shoes
B. F. Goodrich Co.

Brake Linings (Asbestos)
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Breakers (Primary)
Smith Engineering Works
Williams Patent Crusher & Pulv. Co.

Brick Machines
Besser Mfg. Co
Multiplex Concrete Machy. Co.

Bucket Dumps
Dempster Bros., Inc.

Buckets (Clamshell, Grab, Orange Peel, etc.)
Blaw-Knox Co.
Geo. Haiss Mfg. Co., Inc.
Harnischfeger Corp.
Hayward Company
Industrial Brownhoist Corp.
Link-Belt Co.
Owen Bucket Co.

Buckets (Dragline and Slackline)
Blaw-Knox Co.
Bucyrus-Erie Co.
Owen Bucket Co.
Page Engineering Co.
Pioneer Gravel Equipment Co.
Wellman Engineering Co. (G. H. Williams)

Buckets (Dredging and Excavating)
Harnischfeger Corp.
Owen Bucket Co.

Buckets (Elevator and Conveyor)
Chain Belt Co.
Cross Engr. Co.
Hendrick Mfg. Co.
Industrial Brownhoist Corp.
Jeffrey Mfg. Co.
Link-Belt Co.
Pettibone Mullekin Co.
Pioneer Gravel & Equipment Co.
Robins Conveying Belt Co.
Taylor-Wharton Iron & Steel Co.

Bulldozers
Blaw-Knox Co.
Koehring Co.

Bushings (Machined or Processed)
Manganese Steel Forge Co., Inc.

Cableways
American Steel & Wire Co. (U.S. Steel Corp. Subsidiary)
Broderick & Bascom Rope Co.
Link-Belt Co.
Macwhyte Co.
John A. Roebling's Sons Co.
Sauerman Bros.
Wellman Engineering Co. (G. H. Williams)
Williamsport Wire Rope Co.

Calcinators
Bradley Pulverizer Co.

Calcining Kettles (Gypsum)
J. B. Ehrsam & Sons Mfg. Co.

Calcium Chloride
Calcium Chloride Assn.

Cap Crimpers and Fuse Cutters
Ensign-Bickford Co.

Caps (Blasting)
Atlas Powder Co.
Hercules Powder Co.

Car Pullers
Link-Belt Co.

Carriers
Barber-Greene Co.

Cars and Track, Industrial
Besser Mfg. Co.

Cars (Quarry & Gravel Pit)
Austin-Western Road Machy Co.
Easton Car & Construction Co.

Castings
Babcock & Wilcox Co.
Eagle Iron Works (Grey Iron)
Link-Belt Co.
Pettibone Mullekin Co.
Timken Roller Bearing Co.

Cement Making Machinery
F. L. Smidth & Co.

Cement Paints
Tamms Silica Co.

Cement Process
Cement Process Corp.

Cement Pumps
Fuller Co.
F. L. Smidth & Co.

Central Mixing Plants (Concrete)
Blaw Knox Co.
Chain Belt Co.

Chain (Dredge and Steam Shovel)
Bucyrus-Erie Co.
Jeffrey Mfg. Co.

Chain Drives
Chain Belt Co.

Chain (Elevating and Conveying)
Chain Belt Co
Jeffery Mfg. Co.
Link-Belt Co.
Pettibone Mullekin Co.

Chain Drives
Chain Belt Co.

Chain Systems (Kilns)
F. L. Smidth & Co.

Chemicals
Calcium Chloride Ass'n.

Chimney Block Machines and Molds
Besser Mfg. Co.
Multiplex Concrete Machy. Co.

Chute or Launder Lining
B. F. Goodrich Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Chutes and Chute Liners
Earl C. Bacon, Inc.
Cross Engr. Co.

Clarifiers
The Dorr Co.
Hardinge Co., Inc.

Classifiers
Allen Cone & Machy Corp.
The Dorr Co.
Hardinge Co., Inc.
Knickerbocker Co.
Link-Belt Co.

Clay Working Machinery
Bonnot Company

Clips (Wire Rope)
American Steel & Wire Co. (U.S. Steel Corp. Subsidiary)
Broderick & Bascom Rope Co.
Macwhyte Co.
Williamsport Wire Rope Co.

Coal Crushers and Rolls
Austin-Western Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Coal Pulverizing Equipment
Babcock & Wilcox Co.
Bonnot Company
Bradley Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Hardinge Company, Inc.
Pennsylvania Crusher Co.
Raymond Bros. Impact Pulv. Co.
F. L. Smidth & Co.
Williams Patent Crusher & Pulv. Co.

Colors, Cement
Geo. S. Mepham Corp.
Tamms Silica Co.

Compressed Air Rock Drills
Chicago Pneumatic Tool Co.
Cleveland Rock Drill Co.

Compressors (See Air Compressors)

Concentrators
The Dorr Co.

Concrete Breakers
Ingersoll-Rand Co.

Concrete Pipe Machinery
Universal Concrete Pipe Co.

Concrete Slab Raising Equipment (Mud-Jack)
Koehring Co.

Conveyor Belting (See Belting)

Conveyor Idlers and Rolls
Barber-Greene Co.
Chain Belt Co.
Jeffrey Mfg. Co.
Link-Belt Co.



Seven years' cooperation of the Gulf engineer and plant men have kept this great cement kiln in efficient, trouble-free operation. The entire weight of the kiln rests on eight trunion bearings—which have been kept in perfect condition with Gulfco Grease. Gulf I C Oil B is used for the reduction gear drive and Gulf Lubcote Special on exposed gears.

Plant Operators Find that the Friendly Cooperation of the Gulf Engineer Contributes to Over-all Operating Efficiency

● There is a PLUS VALUE in using Gulf lubricants—a value that often brings *savings greater than the cost of the lubricants themselves.* It is the service extended by the Gulf engineer in the plant where the lubricants are used.

The Gulf engineer is trained to work tactfully with plant men, to speak their language. His knowledge and experience in handling lubrication problems is being converted into operating benefits for Gulf users from Maine to Texas.

Let a Gulf engineer assist your plant men in placing the lubrication of your equipment on the most efficient basis possible. It is more than likely that further improvements can be made.

GULF INDUSTRIAL LUBRICATION

GULF OIL CORPORATION
GULF REFINING COMPANY
General Offices: Gulf Building, Pittsburgh, Pa.

Classified Directory—*Continued*

Conveyors and Elevators
Allen Sherman Hoff Co.
Earle C. Bacon, Inc.
Barber-Greene Co.
Besser Mfg. Co.
Chain Belt Co.
Fuller Company
Industrial Brownhoist Corp.
Jeffrey Mfg. Co. (Vibrating)
Lewistown Fdy. & Mach. Co.
Link-Belt Co.
Multiplex Concrete Machy. Co.
Pioneer Gravel & Equipment Co.
Robins Conveying Belt Co.
F. L. Smidth & Co.
Smith Engineering Works
Sturtevant Mill Co.
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Conveyors (Pneumatic)
Fuller Company

Conveyors (Screw)
Link-Belt Co.

Conveyors (Spiral)
Jeffrey Mfg. Co.

Conveyoweighs
Richardson Scale Co.

Coolers (See Kilns and Coolers, Rotary)

Correcting Basins
F. L. Smidth & Co.

Couplings (Air Hose)
Boston Woven Hose & Rubber Co.
Cleveland Rock Drill Co.
Ingersoll-Rand Co.

Couplings (Flexible and Shaft)
Chain Belt Co.
Link-Belt Co.

Couplings (Hose, Pipe, etc.)
B. F. Goodrich Co.
Hewitt Rubber Corp.

Cranes (Clamshell)
Austin-Western Road Machy. Co.
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Koehring Co.

Cranes (Air Powered)
Curtis Pneumatic Machy. Co.

Cranes (Crawler and Locomotive)
Austin-Western Road Machy. Co.
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Industrial Brownhoist Corp.
Koehring Co.
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)
Link-Belt Co.
Northwest Engineering Co.
Thew Shovel Co. (Electric, Gasoline and Steam)

Cranes (Excavator)
Koehring Co.

Cranes (Overhead Traveling Electric)
Harnischfeger Corp.
Industrial Brownhoist Corp.

Crusher Parts
American Pulverizer Co.
Pennsylvania Crusher Co.
Taylor-Wharton Iron & Steel Co.

Crushers (Hammer)
Austin-Western Road Machy. Co.
Dixie Machy. Mfg. Co.
Gruendler Crusher & Pulv. Co.
Jeffrey Mfg. Co.
Pennsylvania Crusher Co.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Jaw and Gyratory)
Allis-Chalmers Mfg. Co.
Austin-Western Road Machy. Co.
Earle C. Bacon, Inc.
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.
Gruendler Crusher & Pulv. Co.
Jeffrey Mfg. Co.
Lewistown Fdy. & Mach. Co. (Jaw)
New Holland Machine Co.
Nordberg Mfg. Co.
Pennsylvania Crusher Co.
Pioneer Gravel & Equipment Co.
Smith Engineering Works
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Reduction)
Earle C. Bacon, Inc.
Bonnot Company
Jeffrey Mfg. Co.

Crushers (Ring)
American Pulverizer Co.

Crushers (Roll)
American Pulverizer Co.
Gruendler Crusher & Pulv. Co.
New Holland Machine Co.
Pioneer Gravel & Equipment Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Rotary)
American Pulverizer Co.
J. B. Ehrsam & Sons Mfg. Co.

Crushers (Single Roll)
American Pulverizer Co.
Austin-Western Road Machy. Co.
Gruendler Crusher & Pulv. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
McLanahan & Stone Corp.
New Holland Machine Co.
Pennsylvania Crusher Co.

Crushing Rolls
Allis-Chalmers Mfg. Co.
Babcock & Wilcox Co.
Earle C. Bacon, Inc.
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.
Jeffrey Mfg. Co.
New Holland Machy. Co.
Pettibone Mullekin Co.
Sturtevant Mill Co.
Traylor Engr. & Mfg. Co.

Cupolas (Rock Wool)
Whiting Corp.

Dedusters
Blaw-Knox Co.

Derricks and Derrick Fittings
Harnischfeger Corp.

Detonators
Atlas Powder Co.
Hercules Powder Co.

Diaphragms (Pump)
B. F. Goodrich Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Dippers (Manganese Steel)
Taylor-Wharton Iron & Steel Co.

Dippers and Teeth (Steam Shovel)
Bucyrus-Erie Co.
The Frog, Switch & Mfg. Co.
Thew Shovel Co.

Dirt Moving Equipt. (Dumpter)
Koehring Co.

Ditchers
Barber-Greene Co.
Bucyrus-Erie Co.
Harnischfeger Corp.

Draglines
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Link-Belt Co.
Manitowoc Engr. Works
Northwest Engineering Co.
Page Engineering Co.
Thew Shovel Co.

Draglines (Gasoline or Electric)
Koehring Co.

Dragline Cableway Excavators
Bucyrus-Erie Co.
Link-Belt Co.
Sauerman Bros., Inc.

Dragline Excavators
Austin-Western Road Machy. Co.
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)
Northwest Engineering Co.
Page Engineering Co.
Thew Shovel Co. (Electric, Gasoline and Steam)

Dredge Pumps (See Pumps, Dredging)

Dredges
Bucyrus-Erie Co.
Hayward Co.
Hetherington & Berner, Inc. (Complete Steel)
Morris Machine Works

Dredging Sleeves
B. F. Goodrich Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Drill Bits
Ingersoll-Rand Co.
Timken Roller Bearing Co.

Drill Sharpening Machines
Ingersoll-Rand Co.

Drill Steel
Cleveland Rock Drill Co.
Ingersoll-Rand Co.

Drilling Accessories
Cleveland Rock Drill Co.

Drills
Bucyrus-Erie Co.
Timken Roller Bearing Co.

Drills (Diamond Core)
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.

Drills, Hammer (See Hammer Drills)

Drills (Rock)
Cleveland Rock Drill Co.
Ingersoll-Rand Co.

Drills (Tripod)
Cleveland Rock Drill Co.

Drills (Wagon)
Cleveland Rock Drill Co.
Ingersoll-Rand Co.

Drives (Short Center)
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc.

Dryers
Allis-Chalmers Mfg. Co.
Babcock & Wilcox Co.
Bonnot Company
Combustion Engineering Corp.
Hardinge Company, Inc.
Traylor Engr. & Mfg. Co.

Dumptors
Koehring Co.

Dust Collecting Systems
Allen Sherman Hoff Co.
Allis-Chalmers Mfg. Co.
Blaw Knox Co.

Dust Conveying Systems
Allen Sherman Hoff Co.
Fuller Company

Dynamite
Atlas Powder Co.
Hercules Powder Co.

Electric Cables and Wires
American Steel & Wire Co. (U.S. Steel Corp. Subsidiary)
John A. Roebling's Sons Co.

Electric Mine Hoists
Nordberg Mfg. Co.

Electric Power Equipment
Allis-Chalmers Mfg. Co.
General Electric Co.

Elevator Belting (See Belting)

Emery Mills
Sturtevant Mill Co.

Engineers
Bonnot Company
The Dorr Co.
Fuller Co.
Hetherington & Berner, Inc.
Productive Equipment Corp.
Robins Conveying Belt Co.
F. L. Smidth & Co.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Engines (Diesel)
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.
Nordberg Mfg. Co.

Engines (Gasoline)
K. R. Wilson

Engines (Steam)
Morris Machine Works

Excavating Machinery (See Shovels, Cranes, Buckets, etc.)

Excavators (Crawling Tractor)
Koehring Co.

Excavators (Dragline)
Bay City Shovels, Inc.
Koehring Co.

Explosives
Atlas Powder Co.
Hercules Powder Co.

Fans
General Electric Co.

Feeders
Babcock & Wilcox Co. (Pulverized Coal)
Earle C Bacon, Inc.
Besser Mfg. Co.
Chain Belt Co.
Fuller Co. (Cement and Pulverized Material)
Hardinge Company, Inc. (Weighing)
Jeffrey Mfg. Co. (Pan & Tube)
Pioneer Gravel Equipment Co.
Robins Conveying Belt Co.
Ross Screen & Feeder Co. (Chain)
Schaffer Poidometer Co. (Weighing)
Smith Engineering Works (Plate)
Stearns Mfg. Co.

Filters (Air)
Air Maze Corp.

Flame Arresters
Air Maze Corp.

Flights
Cross Eng. Co.

Forgings
Taylor-Wharton Iron & Steel Co.

Frogs and Switches
Taylor-Wharton Iron & Steel Co.

Furnaces
Combustion Engineering Corp.

Fuses (Detonating and Safety)
Ensign-Bickford Co.

Fuses (Electrical)
General Electric Co.

Galvanized Wire Strand
Macwhyte Co.

Gaskets
B. F. Goodrich Co.
Hewitt Rubber Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Gasoline
Socony Vacuum Oil Co., Inc.
Texas Company

Gears (Spur, Helical and Worm)
Jeffrey Mfg. Co.
Taylor-Wharton Iron & Steel Co.

Gears and Pinions
Earle C. Bacon, Inc.
Chain Belt Co.
General Electric Co.
Link-Belt Co.
Pettibone Mullekin Co.
Taylor-Wharton Iron & Steel Co.

Gelatin and Semi-Gelatin (See Explosives)

Grapples
Blaw Knox Co.
Hayward Co.
Owen Bucket Co.

Grease
Gulf Refining Co.
Socony Vacuum Oil Co., Inc.
Texas Company

Grinding Balls
Babcock & Wilcox Co.
Jeffrey Mfg. Co.

Grizzlies
Jeffrey Mfg. Co. (Vibrating)
Pettibone Mullekin Co.
Productive Equipment Corp.
Robins Conveying Belt Co.
Smith Engineering Works
Traylor Engr. & Mfg. Co.

Grizzly Feeders
Jeffrey Mfg. Co.
Traylor Engr. & Mfg. Co.

Hammer Drills
Chicago Pneumatic Tool Co.
Cleveland Rock Drill Co.
Ingersoll-Rand Co.

BRADLEY

PULVERIZER CO.

Offers

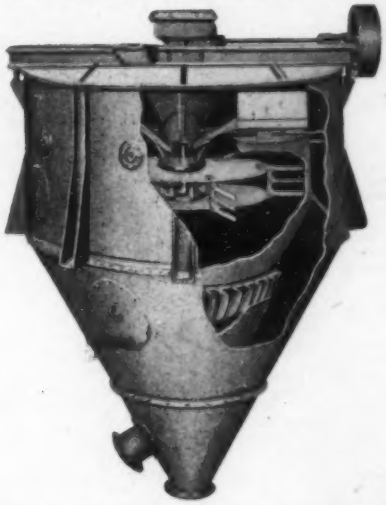
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THE BRADLEY HERCULES MILL



The Mill that has made DOUBLE-STAGE REDUCTION more popular than ever.

THE BRADLEY AIR CLASSIFIER

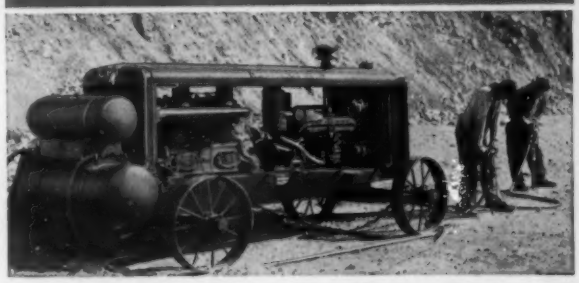


Complete Range of Sizes for any Desired Capacity. Especially Adapted for the Classification of Dry Raw Material and Cement Clinker to Any Desired S. S. Area.

INCREASES CAPACITY
REDUCES POWER CONSUMPTION
IMPROVES PRODUCT

Works: ALLENTOWN, PA.

CP PORTABLE COMPRESSORS + CP ROCK DRILLS = PROFITS



THIS CP Two-Stage Air-Cooled Portable Gasoline-Driven Compressor and the CP-42 Sinker Drills are earning profits for a stone quarry.

High compressor efficiency and high drilling speed, dependability and low maintenance cost, backed by a strong service organization, enable CP Compressors and CP Drills to return profits to Contractors, Quarries and others the world over.

Write for Bulletin 758 which describes these outstanding compressors — gasoline and Diesel-driven — and for Bulletin 850 describing CP Sinker Drills.

CHICAGO PNEUMATIC TOOL COMPANY
Sales and Service Branches All Over the World
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AIR & GAS COMPRESSORS • ROCK DRILLS
DIAMOND CORE DRILLS • DIESEL ENGINES
ELECTRIC TOOLS • PNEUMATIC TOOLS
VACUUM PUMPS & CONDENSERS
OIL WELL ROCK BITS, REAMERS & TOOL JOINTS

CHICAGO PNEUMATIC

C-36-3-½

Classified Directory—*Continued*

Hammer Mills (See Crushers)

Hoists
Chicago Pneumatic Tool Co.
Curtis Pneumatic Machy. Co.
Harnischfeger Corp.
Ingersoll-Rand Co.
Link-Belt Co.
Northwest Engineering Co.
Pioneer Gravel Equipment Co.
Sterling Machinery Corp.

Hooks
Macwhyte Co.

Hose (Water, Steam, Air Drill, Pneumatic, Sand Suction and Discharge)
Boston Woven Hose & Rubber Co.
Chicago Pneumatic Tool Co.
Cleveland Rock Drill Co.
B. F. Goodrich Co.
Hewitt Rubber Co.
Ingersoll-Rand Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Hose Couplings (See Couplings—Hose, Pipe, etc.)

Hydrators
Blaw-Knox Co.

I-Beam Trolleys
Curtis Pneumatic Machy Co.

Insulation (Electric)
General Electric Co.

Kilns (Shaft)
Hardinge Company, Inc.

Kilns and Coolers (Rotary)
Allis-Chalmers Mfg. Co.
Blaw-Knox Co.
Bonnot Company
Hardinge Co., Inc.
F. L. Smidth & Co.
Traylor Engr. & Mfg. Co.

Kominuters (See Mills)

Laboratory Crushers
Earle C Bacon, Inc.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Lamp Guards
Flexible Steel Lacing Co.

Lighters, Hot Wire (For Safety Fuse)
Ensign-Bickford Co.

Lime Handling Equipment
Fuller Company
Hardinge Co., Inc.
Link-Belt Co.
Raymond Bros. Impact Pulv. Co.

Lime Kilns (See Kilns and Coolers, Rotary)

Linings (Iron for Ball and Tube Mills) (See Mill Liners)

Linings (Rubber for Chutes, Ball and Tube Mills, Tank and Pipe)
B. F. Goodrich Co.

Loaders and Unloaders
Barber-Greene Co.
Bucyrus-Erie Co.
Fuller Company
Geo. Haiss Mfg. Co., Inc.
Jeffrey Mfg. Co.
Link-Belt Co.
Northwest Engineering Co.
Robins Conveying Belt
Universal Road Machy Co.

Locomotive Cranes (See Cranes, Crawler and Locomotive)

Locomotives (Electric)
Jeffrey Mfg. Co.

Locomotives (Geared)
Lima Locomotive Works, Inc.

Locomotives (Storage Battery)
General Electric Co.
Jeffrey Mfg. Co.

Locomotives (Steam, Gas and Electric
General Electric Co.
Lima Locomotive Works, Inc.

Log Washer
McLanahan & Stone Corp.
Smith Engineering Works

Lubricants
American Steel & Wire Co. (U.S. Steel Corp. Subsidiary)
Broderick & Bascom Rope Co (Wire Rope)
Gulf Refining Co.
Macwhyte Co.
Socony-Vacuum Oil Co., Inc.
Texas Company

Machinery Guards
Harrington & King Perf. Co.

Magnets
General Electric Co.

Magnetic Pulleys
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.

Manganese Steel (Plates and Sheets)
Manganese Steel Forge Co., Inc.

Manganese Steel Castings
The Frog, Switch & Mfg. Co
Taylor-Wharton Iron & Steel Co.

Manganese Steel Parts
Manganese Steel Forge Co., Inc.
Taylor-Wharton Iron & Steel Co.

Material Handling Equipment
Jeffrey Mfg. Co.

Mechanical Rubber Goods
B. F. Goodrich
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Mill Liners and Linings (Iron for Ball and Tube Mills)
Babcock & Wilcox Co.
Hardinge Company, Inc.
Jeffrey Mfg. Co.
F. L. Smidth & Co.

Mills, Grinding (Ball, Tube, etc.) (See also Crushers Hammer)
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Bonnot Company
Bradley Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Hardinge Co., Inc.
Knickerbocker Co.
Raymond Bros. Impact Pulv. Co.
F. L. Smidth & Co.
Traylor Engr. & Mfg. Co.
Williams Patent Crusher & Pulv. Co.

Mine Car Hitchings
Macwhyte Co.

Mine Handling Equipment
Chain Belt Co.

Mixers (Commercial Concrete)
Jaeger Machine Co.

Mixers (Concrete)
Besser Mfg. Co.
Gruendler Crusher & Pulv. Co.
Jaeger Machine Co.
Koehring Co.
Multiplex Concrete Machy. Co.

Mortar Colors
Geo. S. Mepham Corp.
Tamms Silica Co.

Motors and Generators (Electric Units)
Allis-Chalmers Mfg. Co.
General Electric Co.
Harnischfeger Corp.
K. R. Wilson

Nozzles (Gravel Washing)
Chain Belt Co.

Oil Burners
Babcock & Wilcox Co.
F. L. Smidth & Co.

Oils (Lubricating)
Gulf Refining Co.
Socony-Vacuum Oil Co., Inc.
Texas Company

Overhead Traveling Cranes
Curtis Pneumatic Machy. Co.

Packings (Pump, Valve, etc.)
Hewitt Rubber Corp.
B. F. Goodrich
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Paint (Asphalt)
Texas Company

Pallets
Bassett Foundry Co.
Besser Mfg. Co.
Commercial Shearing and Stamping Co.
Miles Mfg. Co.
Multiplex Concrete Mfg. Co.
Stearns Mfg. Co.

Pavers (Concrete)
Koehring Co.

Perforated Metal
Chicago Perforating Co.
Cross Engineering Co.
Harrington & King Perf. Co.
Hendrick Mfg. Co.
Taylor-Wharton Iron & Steel Co. (Manganese)
Wickwire Spencer Steel Co.

Pipe Machines
Besser Mfg. Co.

Pipe Molds (Concrete)
Besser Mfg. Co.
Stearns Mfg. Co.
Universal Concrete Pipe Co.

Plates
Cross Eng. Co.

Plates (Double Corrugated)
Hendrick Mfg. Co.

Pneumatic Drills (See Drills)

Poidometers
Schaffer Poidometer Co.

Portable Compressors
Ingersoll-Rand Co.

Portable Conveyors
Barber-Greene Co.
Fuller Company
Geo. Haiss Mfg. Co., Inc.
Link-Belt Co.

Portable Crushing and Screening Unit
Austin-Western Road Machy. Co.
Pioneer Gravel Equipment Co.
Smith Engineering Works
Williams Patent Crusher & Pulv. Co.

Portable Loaders
Jeffrey Mfg. Co.

Powder (Blasting)
Atlas Powder Co.
Hercules Powder Co.

Power Tampers
Besser Mfg. Co.

Power Transmission Machinery
Chain Belt Co.

Power Units
K. R. Wilson

Pulleys, Magnetic (See Magnetic Pulleys)

Pulverators
Allis-Chalmers Mfg. Co.

Pulverizers (See also Crushers, Mills, etc.)
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Austin-Western Road Machy. Co.
Babcock & Wilcox Co.
Bonnot Company
Bradley Pulverizer Co.
Dixie Machy. Mfg. Co.
Gruendler Crusher & Pulv. Co.
Hardinge Co., Inc.
Jeffrey Mfg. Co.
Knickerbocker Co.
New Holland Machine Co.
Pennsylvania Crusher Co
Raymond Bros. Impact Pulv. Co.
F. L. Smidth & Co.
Sturtevant Mill Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Pumps (Air Lift)
Fuller Company

Pumps (Cement)
Fuller Company

Pumps (Cement Slurry)
Allen Sherman Hoff Co.
The Dorr Co.
Morris Machine Works
F. L. Smidth & Co.
A. R. Wilfley & Sons

Pumps (Centrifugal)
Allen Cone & Machy. Corp.
Allen-Sherman Hoff Co.
Allis-Chalmers Mfg. Co.
Hetherington & Berner, Inc.
Ingersoll-Rand Co.
Morris Machine Works
A. R. Wilfley & Sons

Pumps (Dredging)
Allen-Sherman Hoff Co.
Bucyrus-Erie Co.
Morris Machine Works

Pumps (Pulverized Coal)
Babcock & Wilcox Co.

Pumps (Sand and Gravel)
Allen-Sherman Hoff Co.
Allis-Chalmers Mfg. Co.
Hetherington & Berner, Inc.
Morris Machine Works
Pettibone Mulliekin Co.
A. R. Wilfley & Sons

Quarry Cars
Easton Car & Const. Co.

Racks or Decks for Lift Trucks
Besser Mfg. Co.

Railway Equipment
General Electric Co.

Ready Mixed Concrete Plants
Blaw-Knox Co.

Ready Mixed Concrete (Truck Mixer Bodies)
Blaw-Knox Co.

Reciprocator Feeder for Unloading Hopper Bottom Cars
Besser Mfg. Co.

Reinforcement Fabric (Concrete)
Wickwire Spencer Steel Co.

Road Binder
Calcium Chloride Ass'n.

Road Machinery
Barber-Greene Co.
Blaw-Knox Co.
Koehring Co.
Harnischfeger Co.
Northwest Engineering Co.

Rock Bits (See Drill Bits)

Rock Drills (See Drills, Rock)

Rock Wool Machinery
Whiting Corp.

Rod Mills
Hardinge Co., Inc.
Traylor Engr. & Mfg. Co.

Rods (Wire)
Wickwire Spencer Steel Co.

Roller Bearings
Timken Roller Bearing Co.

Roofing (Ready to Lay)
Texas Company

Roofing and Siding (Steel)
Joseph T. Ryerson & Son, Inc.

Rope, Wire (See Wire Rope)

Rotary Screens (Sections and Segments)
Hendrick Mfg. Co.

Rubber (Belt Repair)
Manson Glover

Rubber Molded Goods
Boston Woven Hose & Rubber Co.
Hewitt Rubber Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Rubber Covered Screens
B. F. Goodrich Co.

Sack Balers
Besser Mfg. Co.

Sand Drag
Smith Engineering Works

Sand and Gravel Handling Equipt.
Sprout, Waldron & Co., Inc

Sand and Gravel Screening and Washing Equipment
Universal Road Machy. Co.

Sand Settling Tanks
Allen Cone & Machy. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Pioneer Gravel Equipment Co.
Smith Engineering Works

Scales (Automatic Proportioning)
Richardson Scale Co.

Scales (Cement)
Richardson Scale Co.

Scrapers (Power Drag)
Austin-Western Road Machy. Co.
Blaw-Knox Co.
Harnischfeger Corp.
Link-Belt Co.
Northwest Engineering Co.
Pioneer Gravel Equipment Co.
Sauerman Bros., Inc.

Screens
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc.
Besser Mfg. Co.
Chicago Perforating Co.
Cleveland Wire Cloth & Mfg. Co.
Cross Engineering Co.
Hardinge Co., Inc.
Harrington & King Perf. Co.
Hendrick Mfg. Co.
Industrial Brownhoist Corp.
Jeffrey Mfg. Co.
Link-Belt Co.
Ludlow-Saylor Wire Co.
Manganese Steel Forge Co., Inc.
National Wire Cloth Co
New Holland Machine Co.
Nordberg Mfg. Co
Pioneer Gravel Equipment Co.



Two 48" x 60" BIRDSBORO - BUCHANAN Crushers, ready for shipment, are shown above. While these sturdy brutes are capable of crushing the hardest ore and rock in tremendous quantities, they are very economical in power consumption.

They have been designed by engineers of many years' experience in crusher operation. Only the very best of wear-resisting steel is used in their all-steel construction, assuring years of dependable, trouble-proof service under the most severe operating conditions.

Write us regarding any crushing requirement, no matter how large or how small. Our engineers will be glad to cooperate in working out the most efficient and economical answer to your problem.

Write us for the NEW BIRDSBORO - BUCHANAN Bulletin No. 110. It contains much data of value to every crusher operator.

C. G. BUCHANAN CRUSHING MACHINERY DIVISION

of BIRDSBORO STEEL FOUNDRY & MACHINE CO.

90 West St., New York, N. Y.

REPRESENTED IN CANADA BY FRASER & CHALMERS OF CANADA, LTD., 1411 CRESCENT ST., MONTREAL, QUE., G. E. Sancton, Gen. Mgr.

Classified Directory—*Continued*

Productive Equipment Corp.
Simplicity Engineering Co.
Robins Conveying Belt Co.
John A. Roebling's Sons Co.
Ross Screen & Feeder Co.
Smith Engineering Works
Sturtevant Mill Co.
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.
Universal Vibrating Screen Co.
Williams Patent Crusher & Pulv. Co.

Screens, Scalping (Hercules and Standard)
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Screens (Perforated
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W. S. Tyler Co.
Universal Vibrating Screen Co.
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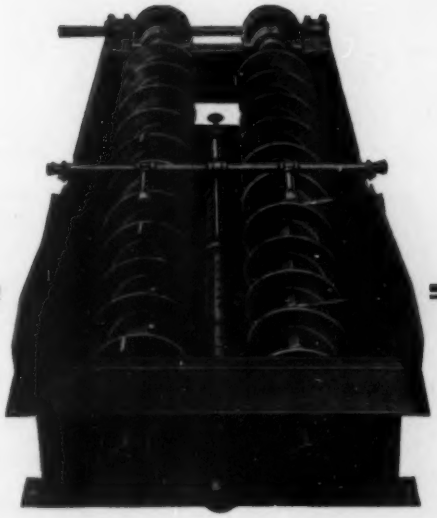
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You also can increase your yardage and dragline profits! For information on a size and weight AUTOMATIC bucket for your machine and job—see your equipment dealer or write us direct. Free bulletin, "The AUTOMATIC" gladly sent on request.

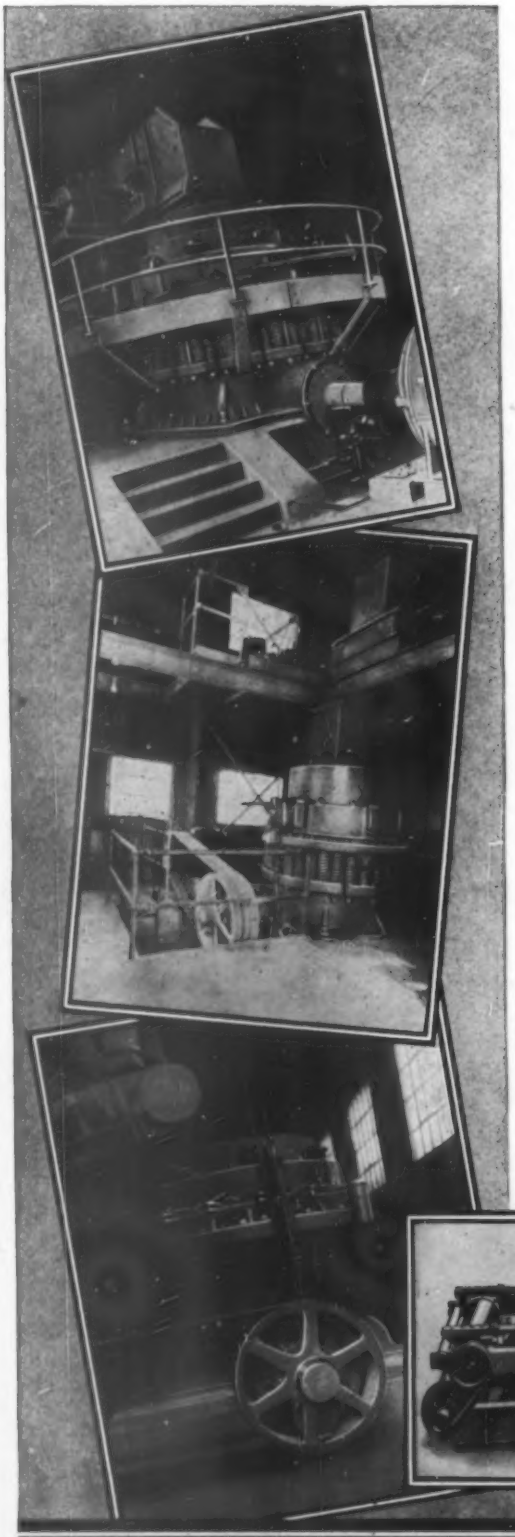
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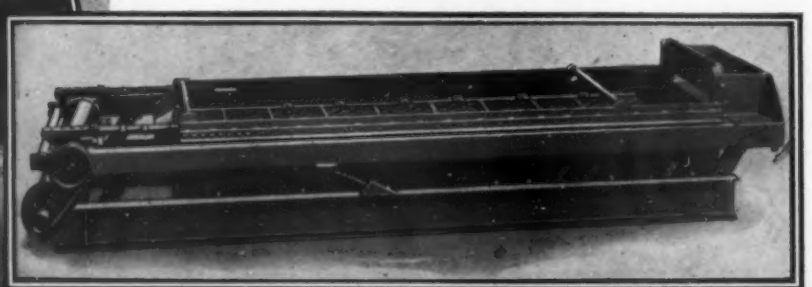
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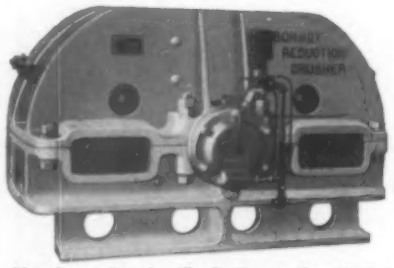
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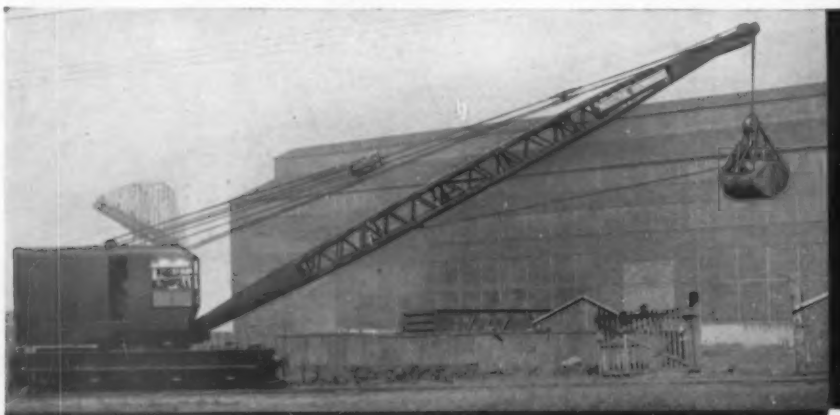
1. **Will produce 100%—¾" minus material;**
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powerful...dependable...economical

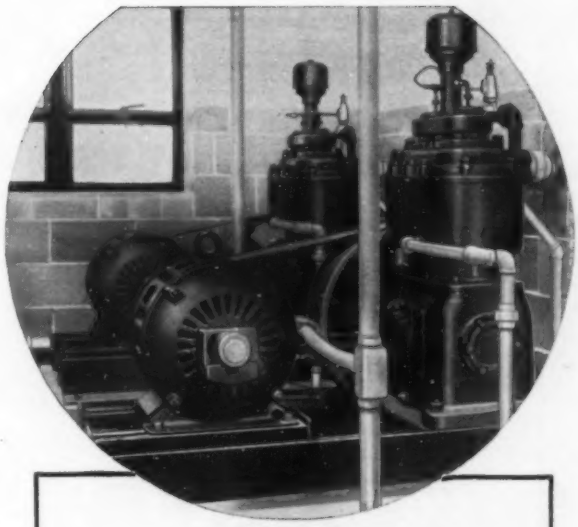
THIS 50-ton Industrial Brownhoist Diesel operates at lower cost, has faster travel speeds, more power and is better handling than any crane of like capacity you have ever seen. And it starts and stops as easily as your automobile. If you require a crane of this size, this new No. 9 will pay for itself out of savings, and in short order. Industrial Brownhoist Diesel, gasoline and steam locomotive cranes are built in capacities of 10 to 200 tons—a type and size exactly suited to your handling and switching service.

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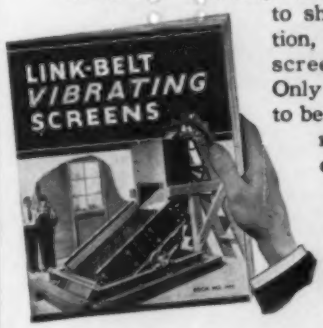
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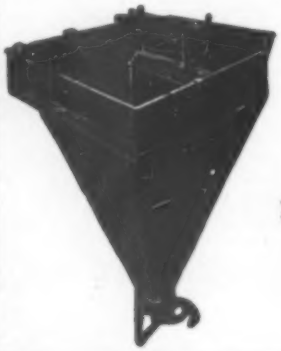
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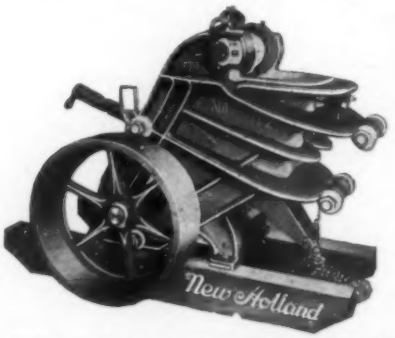
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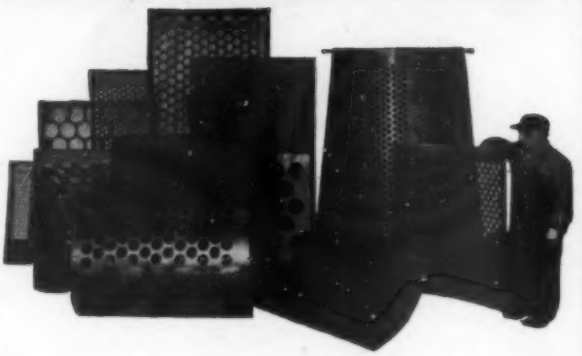
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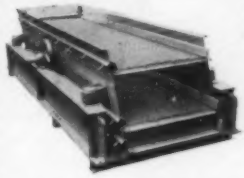
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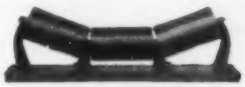
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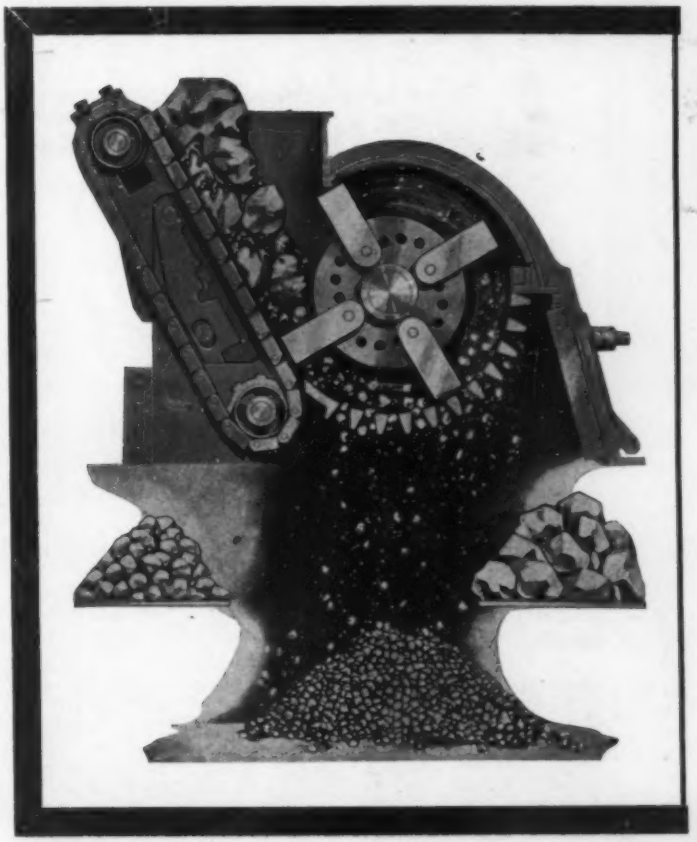
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Note the massive construction of the DIXIE Hammermill — note the efficient design — note the exceptional wear-resisting advantages. Here is the solution to 1937 crushing problems — your big opportunity to forge ahead. The DIXIE gives you these advantages.

More production — more profit — lower operating and maintenance cost. No reduction problem can stump the DIXIE, which handles wet, sticky material direct from the quarry without clogging the feed. The special moving breaker plate gives you twenty-six times the wearing area of any standard type of breaker plate and reduces material to any desired size in a single operation with absolute uniformity. 40 sizes for any capacity — Primary — Secondary or fine Reduction. Write.

Dixie Machinery Mfg. Co.

4209 Goodfellow Avenue ST. LOUIS, MO.

OFF TO A GOOD START IN 1937

. . . . with Hendrick Products

in your crushing and screening plants

REG. U.S. PAT. OFF.

PERFORATED PLATE . . for vibrating, revolving and shaking screens made to the traditional Hendrick standard of quality which insures maximum production and longest service life . . . with the shape of opening best suited for the job, round, square, hexagonal, slotted and the Hendrick special design Squaround.* They can be supplied in any appropriate metal including high carbon and abrasive-resisting steel. Many operators prefer Hendrick high-carbon, heat-treated double corrugated plate . . . a more vigorous screening medium.



Hendrick Perforated Plate is described in greater detail in this new, illustrated book . . . "Perforated Plate." It will provide an excellent "buyer's guide" for your 1937 requirements. Write for a copy.

ELEVATOR BUCKETS . . . They look alike but often they're not. For years Hendrick has been supplying critical buyers with buckets of uniform high strength that fit easily.

TESTING SCREENS . . . Hendrick carries a complete line of testing screens . . . a model to suit every purpose . . . from the portable Hendrick hand-testing outfit to the rugged and efficient Weston Testing Screen.

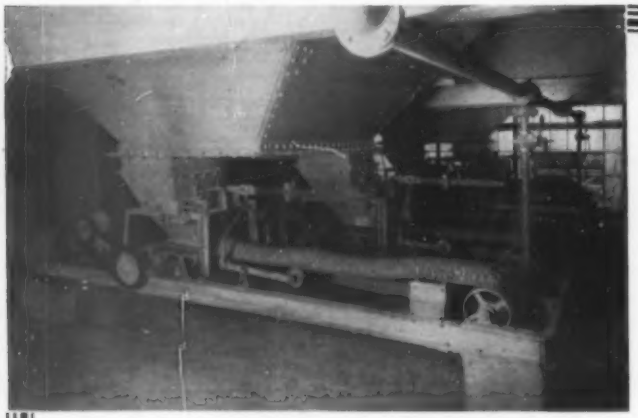
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SALES OFFICES IN PRINCIPAL CITIES
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Makers of Elevator Buckets of all Types, Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

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ACCURACY ATTAINED AUTOMATICALLY

With the 99% Accurate

SCHAFFER

Poidometers

All guess work eliminated—weighing and proportioning of material always accurate—these are features that make SCHAFFER POIDOMETERS such profitable investment. They are automatic in action—self contained and operate continuously. Should a batch operation be desired, a mechanical weighmaster attachment is set for a predetermined amount and causes machine to stop upon delivery of exact amount.

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KNICKERBOCKER Soft Stone Eliminator



Processes gravel or crushed stone to meet any reasonable soundness or abrasion specification by rapid, economical, thorough elimination of soft, friable, or absorbent pieces. Remarkably low operating cost and will pay for itself quickly. Write for details.

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601 Liberty St.
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Chapman Gravel Co., Shiawassee Co., Mich.—user of K.S.S.E. for 5 yrs.



2'x6' Double Mounted on Loader

Start the Year With Larger PROFITS

Cut down repair costs—increase output—produce more accurately sized material. You can do it just as all users are doing it by using the highly efficient modern SIMPLICITY GYRATING SCREEN.

The SIMPLICITY is truly a superior screen with the original counter balanced eccentric shaft—rubber cushioned power—angle adjustment—heavy duty ball or roller bearings, etc.

Data secured from many actual operations using Simplicity Screens enable Simplicity engineers to make definite recommendations and guarantee results.

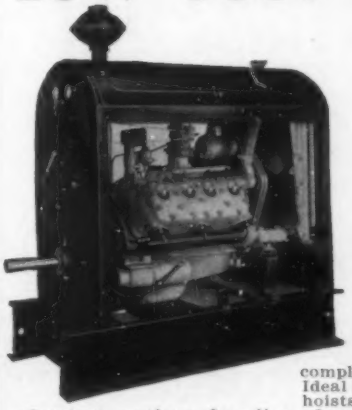
The Simplicity Gyrating Screens are furnished with either flat pulley drive, V-belt drive, or direct motor drive, and will grade larger tonnages with higher screening efficiencies than can be secured by using any other screen of comparable size.

Let us send the complete undisputed facts. Write us today.

SIMPLICITY ENGINEERING COMPANY

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LOW COST POWER *with this* KRW FORD V8 UNIT



Here's dependable, low-cost power up to 60 H. P.—complete, compact portable. Ideal for compressors, pumps, hoists, belt conveyors, bucket elevators, crushers, drag lines, drag scrapers, dryers, portable conveyors, loaders, blast hole drills, welders, etc., etc.

Assembled with brand new heavy duty Ford V8 Truck engine. Large capacity radiator protected by heavy screen. Engine rubber mounted—outfit complete with governor, gas tank, 17 plate battery, instruments and louvered side panels to thoroughly enclose the engine.

Write for complete information, price, and data showing how this unit will **pay for itself out of savings** in a few weeks, whether operated on gasoline or natural gas. You can buy thru your Ford Dealer and benefit by local service and low-cost Ford engine replacement feature.

Also K R W ELECTRIC PLANTS
20 KW outfit with dual voltage take-off for handling **both** light and power requirements simultaneously.

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Exclusive Builder of Approved Ford Shop Equipment Since 1916

STA-TRU LONG-MESH WOVEN WIRE SCREENS



LUDLOW-SAYLOR WIRE CO. ST. LOUIS



Rolled Slot

ALLOY No. 2

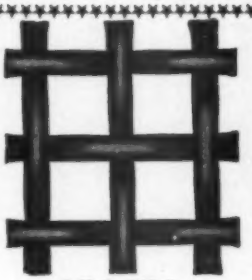
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CLEVELAND SCREENS are star performers—returning larger capacities, increased profits and more accurate separations at lower cost. Cleveland Screens save money with the initial investment because, if they are made of the longer-wearing, wear-resisting ALLOY NO. 2—Cleveland Screens stay on the job long after ordinary screens would have been replaced.

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THE CLEVELAND WIRE CLOTH & MFG. CO.

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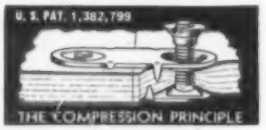
2 Mesh .162 Ga.

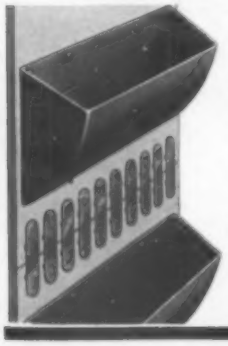
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•A Tight Butt Joint•

for long life of Conveyor and Elevator Belts





Note how recessed plates compress belt end. Internal friction and ply separation in belt ends is overcome. The tight butt of the belt ends prevents passage of materials or liquids through the belt. Made in steel, "Monel Metal," non-magnetic and abrasion resisting alloys. Five sizes. Sold by jobbers and belting houses. Consultation regarding belt joining invited.

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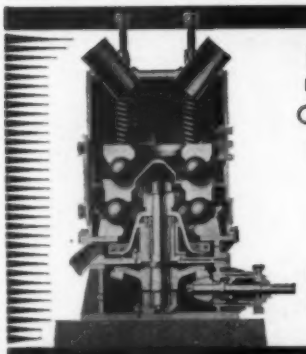
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—FOR—
CRUSHERS
PULVERIZERS
ROLLS
SCREENS

—FOR—
SHOVELS
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CRANES
CONVEYORS

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Established 1881 Carlisle, Pa.



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for grinding:
Cement Materials
Phosphate Rock
Limestone
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Fuller-Kinyon Transport System for Pulverized Fuel.

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Manufacturers and consultants
All kinds of Quarry Transportation, whether Cars, Truck Bodies or Trailers.

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EASTON CAR & CONST. CO.

Easton, Pa.



SAUERMAN
LONG RANGE MACHINES



DRAG SCRAPERS SLACKLINE EXCAVATORS

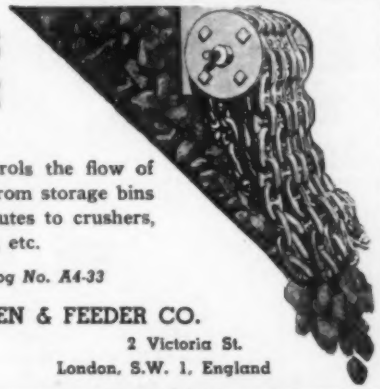
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The sizes of Sauerman machines range from portable units for small pit operations up to huge machines with capacities of 600 tons per hour. There is a special type for underwater excavation, another for digging from a bank, another for storing and reclaiming, and so on. Tell us your problem and we will mail you a booklet describing the type of machine that meets your requirements.

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The ROSS FEEDER

HAS NO RIVAL



It completely controls the flow of any size material from storage bins and open dump chutes to crushers, conveyors, screens, etc.

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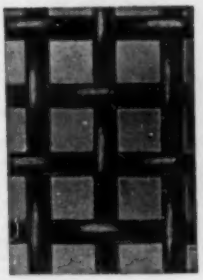
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FIVE STAR FEATURES

of Nat-aloy Wire Cloth



- ★ Wears five times as long as cloth made of ordinary steel
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- ★ Maintains accuracy throughout life of screen
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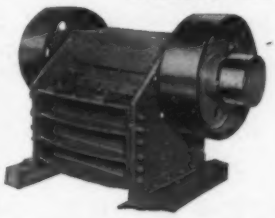
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CRUSHERS and PULVERIZERS



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Gruendler crushers and pulverizers prepare rock for cement mills or aggregate at extremely low cost per ton. Capacities from 10 tons to 4000 tons daily. All steel construction — low upkeep cost.

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Equipment for Both Fixed and Road-side Plants.

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11 to 13½% Nickel Manganese Steel

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Welding Electrodes, Applicator Bars, Wedges

for Reclaiming 11 to 14% Manganese Steel Parts

Get them from your regular jobber.

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The WILLIAMS "Champion"

THE BUCKET FOR OUTPUT



DIGS FASTER because of its shorter cable overhaul, and super-power developed by exclusive combination of lever and block-and-tackle.

We also build Williams Power-Wheel, Multiple-Rope and Dragline Buckets. Write for Bulletins.

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YES send me your new BOOK "data on Controlled Vibration and Screen Efficiency."

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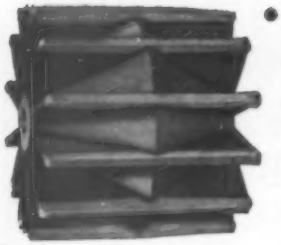
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PRODUCTIVE EQUIPMENT CORP.

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CONVEYORS LAST LONGER

where SPROUT-WALDRON Wing Pulleys are used. The same is true of your Elevator belts.

Material conveyed cannot lodge between belt and pulley to cut your belts.

Interchangeable with standard pulleys.

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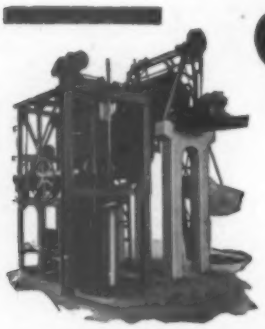
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Elevating, Conveying and Transmission Equipment

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
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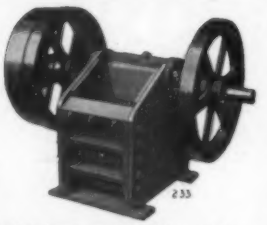
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PIPE MOLDS
(New and Used)

All equipment necessary for the pipe manufacturer

UNIVERSAL CONCRETE PIPE CO.
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Roll Jaw Type



A full series from 8"x12" up. Plain bearings and roller bearings. Can be furnished mounted on trucks with or without elevator and power.

Elevating, Conveying and Power Transmission Machinery, Screens and Scrubbers, Complete Plaster Mills.

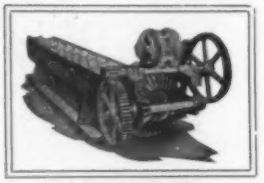
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PROMPT SHIPMENT

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2427 to 2445 West 24th Place
Tel. Canal 1489 CHICAGO, ILL.

Why ship dirty stone when it can be made clean easily and so economically?



SCRUBBER

This scrubber will do the good work.

State Capacity Required!

LEWISTOWN FOUNDRY & MACHINE CO.

Mfrs. of Sand Crushing, Grinding, Washing and Drying Machinery

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SAND AND GRAVEL DREDGING PUMPS
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BELT CONVEYORS • BUCKET ELEVATORS • BOILERS
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AIR COMPRESSORS • CRUSHERS • LOCOMOTIVES • CARS
• • RAIL AND PORTABLE TRACK AND STORAGE TANKS • •



Belt Conveyor Idlers and Pulleys, from 16" to 36" wide.
Belt Conveyor Trippers, from 16", 18", 24" and 30" wide.
18" Belt Conveyor Equipment, with 110' 6-ply belt.
16" Belt Conveyor Equipment, with 70' 6-ply belt.
14" Belt Conveyor Equipment, with 100' 4-ply belt.
Portable Electric Scoop Flat Conveyor, 14"x24'.
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Repair Parts for Chain and Belt Bucket Elevators.
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Jeffrey No. 3 Combination Jaw Crusher and Hammer Mill.
Farrel Jaw Crusher, 42"x40", type E.
Kennedy "37" Gyratory Crusher, with 75-hp. syn. motor.
Reliance 9"x16" Jaw Crusher.
Acme 10"x42" Jaw Crusher.
Sturtevant No. 0 Ring Roll Pulverizer.
Champion Package Filling and Weighing Machine, ½-hp. A.C.
Revolving Stone Screen, 4' diam., 20' long.

Jigger Selectro 3-Deck 3'x8' Vibrating Screens, new.
10—Hummer Electric Vibrating Screens, 1 and 2 decks.
Hummer Screen Generators, 8 K.V.A., 15-cycle.
LeCourteney Centrifugal Electric Pump, 150' G.P.M., 150'.
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Domestic Centrifugal 6" Centrifugal Pump, 1,000 G.P.M.
Fairbanks-Morse Belted Centrifugal Pump, 375 G.P.M., 70'.
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Johnston Locomotive Boiler, 100 H.P., 125 lb., on skids.
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Easton Swivel 24" gauge 1-yd. Cars, with brakes.
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Clamshell Material Buckets, ¾, 1, 1½-yards.
Tip-Over Buckets, Steel Skips, Chain Slings.
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Mundy Double-Drum Hoist, 25 H.P. Slip Ring Motor.
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Ingersoll-Rand Belted XCB Air Compressor, 676'.
Ingersoll-Rand Belted XB Air Compressor, 446'.
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Schramm Air Compressor Unit, with Tank and 15 H.P. motor.

FOR SALE

One (1) ORTON gasoline operated truck crane, ½ yard capacity.
One THOMAS, two-drum, two-speed, 55 H.P. electric hoist.
Two (2) LIDGERWOOD steam hoists.
Twelve (12) Head and Tail Pulleys, with drives, takeups and bearings for 24" and 30" belts.

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Model 70 Marion Steam Shovel 2½ yard bucket, workable condition, sell cheap, can be seen at Osborn, Ohio.

Wabash Portland Cement Company
DETROIT, MICHIGAN

35 Diesel and Gasoline engines up to 175 horsepower on hand.

JOHN REINER & CO.
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Good Equipment—Priced Right

1—Northwest No. 7 crane, 1⅝ yd. cap. 70' boom.
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1—Lorain shovel 1½ yd. cap.
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2—Osgood steam shovels, heavy duty 1¼ yd. cap.
1—Browning truck crane on Mack truck.
2—Locomotives, gas, 20 tons, 36" ga. Whitcomb.
1—Locomotive, gas, 20 tons, 36" ga. Vulcan.
1—Locomotive, gas, 4½ tons, gas 36" ga. Vulcan.
25—Cars, 5 yds. two way dump, 36" ga.
16—Cars, 2 yd. steel V dump, 36" ga.
1—Batcher Plant, Butler, 3 compartments—125 yds. bin with weigh meters, cement bin, screw conveyor, complete.
Conveyor belt systems, 26", 22", 30" belts, idlers, troughing rollers, take ups, etc.
50—Rock drills, DCR-23, X49, X59, 870, others.
16—Concrete breakers, pneumatic.
30—"BARRE" carving tools, BL, CL, DL.
1—Bucket elevator, 32'.
1—Compressor, 1200 cfm. I. R., type PRE-2 electric.
1—Compressor, 900 cfm. Worthington, Diesel driven.
1—Compressor, 514 cfm. short belt drive, electric.
1—Screen, Telsmith vibratory, 4'x12', 5 h.p. motor.
1—Storage bin, 500 yds., steel portable 4 compts.
5—Trucks, White 5 yds. dump, motor.
2—Derricks, steel stiff leg, 15 tons cap. 100' booms.
4—Derricks, steel guy, 7½ tons cap. 75' booms.
Buckets, all kinds. Ask for special list. Hoists, boilers, motors, steel hoisting blocks.

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RICHARD P. WALSH CO.
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24-ton Porter 4-wheel saddle tank locomotive, 12x16" cylinders, built 1927, 36" gauge.
21-ton Vulcan 4-wheel saddle tank locomotive, 11x16" cylinders, built 1922 to 1927, 36" gauge, six duplicates.
18-ton Porter 4-wheel saddle tank locomotive, 10x16" cylinders, 36" gauge.
18-ton Baldwin 4-wheel saddle tank locomotive, 10x16" cylinders, 36" gauge.
5-yard Western heavy duty steel underframe two way side dump cars, 36" gauge.
Nordberg Track Shifter, 36" gauge.
Western Spreader, 36" gauge.
20-ton Industrial 8-wheel locomotive crane, 50' boom.
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MODERN EQUIPMENT

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3—Hayward ⅝ and 1-yd. Orange Peels.
1—Koehring ¾-yd. Shovel.
1—701 Lima Gas Shovel.
1—¾-yd. P. & H. 206 Shovel.
6—12 & 14-ton 36" gauge gas Locomotives.
3—3-ton 36" Gauge Gas Locomotives.
30—Western 4-yd. and 5-yd. Dump Cars.
15—2-yd. V-Shape Standard Gauge Dump Cars.
2—807' Ingersoll-Rand XCB Compressors.
1—1000' Chicago Pneumatic Diesel Air Compressor.
3—60 H.P., 3 ph., 60 c., 220-440 v. Electric Motors.
2—100 H.P. Locomotive Type Firebox Boilers.
1—10-ton 80 H.P. 100' Boom Guy Derricks. 25 H.P. Gas Scraper, ½-yd., Sauerman 4-yd.
1—4'x12' Tel-Smith Vibrating Screen.
1—Telsmith No. 5 Crusher.
1—6-ton Universal Truck Crane.
1—125 H.P. Atlas Diesel.
1—125 H.P. 6 cyl. Hall-Scott Gas Engine.

COAST-TO-COAST STEEL & EQUIPMENT CORP.
101 W. 31st Street — New York, N. Y.

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CONSOLIDATED

Good Used Crushing, Pulverizing, Drying and Filtering Equipment

SELECTED SPECIAL ITEMS

15—Jaw Crushers, 7"x24" Sturtevant; 24"x36" Farrell, Buchanan; 36"x42" Traylor; 42"x60" Farrell; 48"x60" Allis-Chalmers; 48"x72" Buchanan; also wide variety of smaller sizes and types.
3—6", 10" McCully Reduction Crushers.
4—36x16", 20x14" Sturtevant Crushing Rolls; also other sizes and types.
4—Raymond Roller Mills—3 and 5-roll high side; 5-roll low side.
5—Raymond Pulverizers, No 0000, 00, 1, 3.
6—Raymond Imp Mills—No. 3, 45, 50, 55.
1—10' dia. Sturtevant Air Classifier.
2—30", 10' Gayco Air Separators.
9—Hardinge iron lined Ball Mills, 4½'x16", 5'x22", 6'x22", 7'x36", 8'x22", 8'x30".
1—No. 32 Marcy Ball Mill.
1—6'x22" Hardinge silex lined Pebble Mill.
3—42" Fuller-Lehigh Mills, UNUSED.
3—Nos. 1, 1½, 2 Sturtevant Ring Roll Mills.
3—5'x22' silex lined Gates Tube Mills.
1—3'x12' Hendy iron lined Tube Mill.
2—P.&M. 8'6" and 9'6"x150' Rotary Kilns.
1—8'x125' P.&M. Rotary Kilns.
2—8'x110' Bonnot Rotary Kilns, and smaller sizes.
15—Direct heat Rotary Dryers, 4'x20', 4'x30', 5'x26', 5'x30', 5'x50', 6'x40', 6'x60', 7'x60', 8'x60'.
2—5'x26', 5'x30' Double shell Rotary Dryers.
8—Tyler Hummer Screens, 3'x5', 4'x5', different types.
6—3'x6' Sturtevant M.V. Screens, 2-deck.
1—5'x8' Niagara Vibrating Screens, 2-deck.
4—Magnetic Pulleys, 12"x18", 14"x20", 24"x72".
2—No. 2 Sturtevant Rotary Fine Crushers, direct a.c. motor driven.
1—18"x36" McLanahan single roll crusher, Texrope drive, 25 H.P. 3/60/440 v. motor.
4—Jeffrey single roll Crushers, 18x18, 24x24, 30x30, 36x36.
1—36x36" 4XB Gruendler Hammer Mill.
1—Cableway, 1110' span, with towers, cables, buckets, and motor driven hoist.
1—12x10" C.P. Air Compressor, NSB, with 60 H.P. AC motor.
1—10' Clyde Lime Hydrator.



Shops and Yards Cover 8 Acres of Ground

SEND FOR BULLETIN of our regular stock of Crushers; Vibrating Screens; Ball, Rod and Tube Mills; Air Compressors; Rotary Kilns and Dryers; Hardinge Ball and Pebble Mills; Raymond and other Pulverizers; Air Classifiers, Thickeners; Wet Classifiers; Filter Presses; Continuous Filters, etc.

REMEMBER—We will buy a Complete Plant or a Single Machine.

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Cars	**Excavators**	**Pumps**
Compressors	**Elevators**	**Rail**
Conveyors	**Hoists**	**Scales**
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BLOCKS—VAULTS—WALLS
Ornamental Casts, etc.
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Two complete shovel front ends for Bucyrus-Erie 42-B steam cranes. 21' booms, 15' handles, 1½ cu. yard Vanderhoef dippers. Priced to sell.

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Monighan 3W Diesel Dragline, 75' boom. Real Barg.
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12—5-yd. 36" ga. Western Dump Cars.
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1—9x10 Sturtevant Vertical Steam Engine.
1—10x10x12 Ingersoll Steam-Driven Air Compressor.
1—9x10 Lidgerwood 3-Drum Steam Hoist.
1—8¼x8 Lidgerwood S.D. Steam Hoist.
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1-15 ton WESTINGHOUSE BATTERY TYPE SWITCHING LOCOMOTIVE, Standard Gauge. Also JEFFREY, GENERAL ELECTRIC, WESTINGHOUSE, and GOODMAN, Electric Locomotives for every purpose, all weights and gauges.

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14 cars like new, Easton 36" ga., 2 cu. yd. capacity, "V" shaped, all steel, heavy duty. Also, all sections new and relaying rail and portable track, 12 lbs. to 130 lbs. Wire or write for prices.

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Shepard 50-ft. span, 4-motor, bucket handling crane, 440-volts, 3-ph., 60-cy., plenty of spare parts, two clamshell buckets, 300' of steel outdoor self supporting runway 30' high.
1578-cu. ft. Chicago compressor, type O.C.B., size 22 and 13x16 belt drive, less electrical equipment. Low prices and immediate shipment.

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Portable and stationary, belt, with elec. or gas power, sizes from 21 cu. ft. to 1,000 cu. ft.

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8—Bins: 2 Blaw Knox 118 ton; 1—Blaw Knox 117 ton with weigh batchers; 1—Butler 75 yd. with weigh batchers; 2—Johnson 76 yd. and 54 yd.; 2—Blaw Knox 72 ton with or without weigh batchers. All 2 compartment.

BUCKETS

1—4-yd. Hayward Class "G" clamshell.
34—Williams, Blaw Knox, Owen clamshell buckets, all sizes and types.
5—Dragline buckets, 1—Northwest 1¾-yd., 2—Page 1½-yd., 1—Page RC 1¼-yd., 1—Blaw Knox 1-yd.

CABLEWAY EXCAVATOR AND DRAGSCRAPER OUTFITS

6—Dragscraper buckets from ⅛ cu. yd. to 2 cu. yd. size.
1—Thos. 150 HP DD special cableway excavator hoist No. 7671, Class L, for handling 2 yd. bucket.
1—O. K. Clutch & Machinery Co. 120 HP. 3 drum gasoline dragscraper hoist for handling 2 yd. bucket.
1—National 50 HP, 2-speed, electric dragscraper hoist for handling 1 yd. bucket.

CARS

Large lot including std. ga. 6 and 12-yd. and 20-yd., 36-ga. 5 yd. and 24-ga. 1½-yd.

CONVEYORS and ELEVATORS

9—Port. belt conveyors with steel frame, gas, or elec. pr. 18 and 24 in. Barber-Greene and Chic. Automatic.
11—Bucket elevators: 6—Chain Belt Co., Weller, and Link-Belt vertical enclosed type; capacities from 35 to 117 tons per hour. 5—Weller inclined type. Nos. 3, 4, 5 and 6 up to 170 yds. per hr.

CORE DRILL

1—Sullivan Model 21 diamond core drill with Hyd. feed and gasoline power. New—Never used.

CRANES AND DRAGLINES

1—Koehring Model 501 dragline, Serial No. 1076, 45' boom, 1¾-yd. bucket.
1—Northwest Model 104, Serial No. 2079, 45' boom, 1¾-yd. bucket.
2—Northwest Model 105, Serial No. 756 and 2053, 40' boom, 1-yd. bucket.
1—Link Belt Model K-1 crane, shop No. 1024, 50' boom, 1-yd. bucket.
1—Osgood heavy duty dragline, Serial No. 5069.
1—Industrial Brownhoist type CC, No. 5071, 30' boom, ¾-yd. bucket.
1—Byers Bearcat crane, Model 26, Ser. 30474, half circle swing, ¾-yd. bucket.
1—Erie type B-2, Serial No. 3900 steam crane, 40' boom, 1-yd. bucket.

CRANES (Locomotives)

5—Locomotive cranes; sta. ga. 30 and 25 tons; Ohio, Browning, American, Industrial.

CRUSHERS

1—Symons coarse cone crusher, size No. 5½, SU No. 521.
1—Set P & M crushing rolls, size 42"x16".
1—Allis-Chalmers, Style N, No. 8, gyratory No. 7755.
1—Allis-Chalmers Gates No. 5, Ser. 5331.
2—McCulley No. 3 gyratory.
1—Carrel 24"x36" jaw, manganese fitted.
1—Champion size No. 6, 12"x36", Ser. No. 1075.
1—Allis-Chalmers Blake type, size 10" x20", manganese fitted, Ser. No. 3163.
1—Champion size No. 4, 9"x15", jaw.

DERRICKS

Steel and wood, stiff leg, or guy; from 2 to 50 tons, including 3 steel stiff legs: 1—10 ton American 80' boom; 1—10 ton Insley 80' boom; 1—15 to.: Dobbie 100' boom.
3—American 20 ton guy derricks, 100' booms.
3—Bedford 7 ton guy derricks, 90' booms.

DREDGE

1—12" Morris manganese dredge, 300 H.P. A.C. motor, all complete with 6" jet pump, 3 drum hoist, 1000' 12" pipe, and mounted on a sectional steel hull 22'x48'.

HOISTS

Gas, Elec. and Steam—All sizes.

LOADERS

2—Barber Greene Model 42-A, self feeding loaders, cap. 1¾-yd. per minute.

LOCOMOTIVES

33—Gasoline locomotives, from 20-ton to 2-ton, std. ga. 36" and 24" ga.
2—Plymouth st. ga. gas locomotives: 1—20 ton model HL No. 2351; 1—12 ton model JLB No. 2308.
1—Porter steam saddle tank locomotive 24-ton cylinders 12x16; std. ga. No. 5093.

PNEUMATIC TOOLS

68—Ingersoll-Rand, Chgo. Pneu., and Thor jackhammers, concrete breakers, chipping hammers, spades, reamers, riveting hammers, wood borers, grinders and surfacers.
26—Drills (Column, Derrick and tripod mounted) Gardner Denver Models 17 and 21, IR-X71, and Sullivan Model FU3.
1—Drill Sharpener, Ingersoll Rand No. 50, Shop No. 6121.

PUMPS

4—Belt Driven Dredge pumps. 1—8" Morris; 1—6" Morris manganese; 1—6" Erie; 1—4" Morris.
2—Dayton Dowd 5" suct. 4" dis. centr. pumps V-belt drive to 100 H.P. Northwest oil engines, cap. 600 GPM at 450' head.

SCREENS

2—48"x18' P & M roller type screens.
1—60"x12' P & M roller type screen.
1—30"x21' Climax revolving screen.
1—Stephens-Adamson double deck vibrating screen, 3'x6' suspension type.

SHOVELS

4—Gas shovels: 2—1¼-yd. Lorain 75-B Nos. 4653 and 4899, one with pull-shovel attachment; 1—1-yd. Osgood heavy duty No. 2969; 1—½-yd. Brownhoist No. 1 combination shovel and crane Ser. 10857, ½-yd. shovel front and 35' crane boom.
3—Link Belt shovel attachments for K-55, K-44, K-43, K-38, K-2 machines.
7—Steam shovels: 1—1¾-yd. Bucyrus 50-B No. 10311; 2—1½-yd. Osgood Nos. 1576-6; 1—1¼-yd. Marion 32 No. 5280; 1—1¼-yd. Bucyrus 30-B No. 3910; 1—1-yd. Erie B-2 No. 3900; 1—¾-yd Erie B.

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1—**Bucyrus. Full Electric. Shovel 320B.** Ward Leonard Control. 2300 Volt. 6½-yd. Dipper, 90'-0" Boom. 40'-0" Dipper Stick. Excellent Condition.
8—20 yard All Steel Std. Ga. **Western** Air Operated **Dump Cars**—Built 1929.
2—**Ruggles** Class XA-14, 95"x50' **Dryers.** New 1930. Very good condition. Complete.
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4—**Fuller Mills,** 42" Gear Drive.
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2—5000/5 Amp. **General Electric Transformers** for 3000 KW Generator (New.)
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1—**Myer Whaley No. 4 Shovel.** Very good.
1—375 H.P. **Westinghouse Motor,** Slip Ring. Type HF, 580 RPM, 3 phs., 60 cyc., 440 volt.

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1—1½-yd. Sauerman Crescent Type Drag Scraper Bucket, manganese teeth.
1—1-yd. Sauerman Crescent Type Drag Scraper Bucket, manganese teeth.
1—9"x16" Indiana Jaw Crusher.
1—8" Holtz sand and dredging pump—belt driven.
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5—Clamshell Buckets, ⅓ to 1¼-yd.
1245 ft. Ingersoll-Rand Compressor.
450 ft. Ingersoll-Rand Compressor.
1—100 HP. Elec. Dragline Hoist, 2-yd. bkt.
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1—4½x6 Swinging Engine.
1—Barber-Greene 42 Bucket Loader.
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6—5 yd. 36" ga. Dump Cars.

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3—24" Link-Belt Shaw Sand Classifiers
In Excellent Condition

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2 — 26'0"x76'0"x5'0" — 15" Steel Dredge Boats, complete, equipped with 60'0" Str. Steel Ladder, Rotary cutter, 15" Amsco Manganese Dredge Pump, Marion 5 Drum electric Hoist, Marine Cable, solonoid brake, grids, priming pump, 2 — 60'0" spuds, overhead lever bank, 20'0" A Frame, 300 and 350 HP Electric Motors 2200 Volt, Manganese Stone Box, 15" Manganese Elbows, long and short radius, and complete in every detail. Additional 35'0" Structural Steel Ladder.

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676' Worthington Duplex Air Compressor.
2040 & 3600' I. R. Elec. Compressors.
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25 Ton & 40 Ton Steam Locomotives.
8 and 14 Ton Plymouth Gas Locomotives.
24", 30", 36" Conveyor Equipment.
18"x30' Steel Pan Conveyor.
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4½x6 Mundy Steam Derrick Swinger.
22" by 80' Bucket Elevator.
Buchanan 30" Magnetic Pulley.
90 HP Fairbanks Morse Diesel Engine.
1¼ yd. Speeder Gas Cat. Shovel.
36x16 Kennedy Double Roll Crusher.
7x10 Double and 3 Drum Steam Hoists.
21-E Koehring Gas Cat. Paver.
100 lb. Cap. Asphalt Pug Mill.
25 Ton Ohio Locomotive Crane.
85 Kw. 250 V-DC, 220 V-AC M.G. Set.
110 HP Single Drum Incline Hoist.
3—60 HP Electric Hoists.

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2' Symons cone fine bowl
2' Symons cone coarse bowl
2' Symons Horizontal Disc
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This includes clamshell bucket.

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Gyratory Crushers: Nos. 5K, 6K & 8K Gates, No. 5 McCully, No. 6 & 10 Austin, No. 6 BH Taylor.
Jaw Crushers: 9x16 up to 60x84.
Rotary Dryers: 4½x30, 5x50, 6x55.
Smooth Face Crushing Rolls: 54x24, 42x24, 36x16, 40x15, 30x16, 20x14, 16x12.
60' Guy Derrick Handling Outfit with 60 HP Gas Hoist.
1-yd. Sauerman Elec. Slackline Outfit.
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Tube Mills: 7x22, 7x10, 6½x16, 5½x20, 5x22 and 5x18.
No. 1½ Sturtevant Ring Roll Mill.
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250-ton Hydraulic Forcing Press.
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Rotary Kilns, 8x110 and 6x60.

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2—1½-yd. Jaeger truck mixers mounted on Mack trucks.
No. 10 Jaeger non-tilt mixer on pneumatic tires, 1936 model.
Hinman bar bender.
Anchor tamper with feeder, elevator, with Hobbs Block Machine, rebuilt.
8" steel stripper pallets, 40% cores.

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15 and 20-ton Steam and Gaso. Locomotives.
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All Sizes—All Kinds of Power Equipment.

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- ☐ 3—Hayward 1½ Yard SNOW Buckets.
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- ☐ 1—Blaw Knox ¾ yd. Dread Naught type Bucket with teeth.
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1—12"x24" Acme Jaw Crusher.
1—10"x20" Climax Jaw Crusher.
1—9"x15" Blake Type Jaw Crusher.
1—36"x42" Jeffrey Style B Hammer-Mill Pulverizer.
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1—No. 3 Jeffrey Hammer-Mill Pulverizer.
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1—36"x36" Single Roll Coal Crusher.
2—10"x12" Double Roll New Holland Crushers.

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Aspinwall, Pa.

Jaw Crushers—2"x6" up to 66"x84".
Crushing Rolls—12"x12" up to 54"x24"—Gyratory Crushers—No. 3 up to 42".
Ring Roll Mills — No. 0 and No. 1 — Swing Hammer Mills.
Rotary Fine Crushers—No. 1, No. 1½, No. 2.
Direct Heat Rotary Dryers—4'x30', 5'x50', 5½'x35', 6'x60', 3½'x25', 8'x50'.
Semi-indirect Heat Dryers, 4'x30', 4½'x26', 5'x30' and 8½'x75'.
Cement Kilns—3' up to 9½' diameter.
Hardinge—Marcy & Fuller—Lehigh Mills.
Raymond Mills—No. 00, No. 0, No. 1 & 5 roll.
Tube—Rod and Ball Mills—4' to 8' diameter.
1—6'x22" Hardinge ball mill.
New dryers made for all purposes.
One No. 27 I-R oil furnace for drills.

W. P. HEINEKEN

95 Liberty St., N. Y. — Tel.: Barclay 7-7298

22' Bonnot tube mill.
2—35'x5'9" direct heat driers with stacks.
9"x16" heavy duty jaw crusher.
No. 3, 5, and 6 gyratory crushers.
80 H.P. Chicago Pneumatic Tool Co. oil engine.
2—50 H.P. Fairbanks-Morse oil engines.

ROBT. A. BOOTHE EQUIPMENT CO.
Sheffield, Ala.

NEW 84"x60" JAW CRUSHER

1—Each 56"x72" — 48"x72" — 48"x60" — 36"x54" AND MANY SMALLER ¶ GYRATORY CRUSHERS up to No. 21 K Gates.
Pulverizers—Reduction Crushers—Pumps—Screens—Cranes.
EVERYTHING FOR PIT AND QUARRY.

Ross Power Equipment Company.
Indianapolis, Indiana.

FOR SALE

1 complete Duntile Automatic Jr. Machine with molds and parts to make 8x8x12 rock and plain face, 6x6x12 rock and plain face, 4x4x12 plain, 4x12 drain tile.
1 multiplex stripper, Model C, with pallets and rock face attachment.
1 Dun automatic portable mat glazing outfit.

SACK BROTHERS, Bemus Point, N. Y.

FOR SALE

1—Sullivan Class "A" Drill Sharpener
1—Sullivan Class "C" Drill Sharpener
2—Ingersoll Rand Type XB Compressors 1482 cu. ft. at 80 to 100 lbs. 300 HP 25 cycle motors.
1—Ingersoll Rand Type ERI Compressor 528 cu. ft. at 100 lbs. 50 HP, 60 cycle motor.
1—Chicago Pneumatic Compressor, 218 cu. ft. at 70 lbs. 30 HP 60 cycle motor.
1—Laidlaw Dunn Gordon 17x10x14 Compressor, 800 cu. ft. at 100 lbs. 150 HP, 60 cycle.
1—Ingersoll Rand 14x10 Compressor, 503 cu. ft. at 60 lbs. 35 HP, 60 cycle.

DONAHUE STEEL PRODUCTS CO.
7406 S. Ashland Avenue,
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FOR SALE

200 Koppel gypsum block cars, 36"x36" platform, 4 wheel steel frame 24" gauge; 14 ball bearing cast-iron turntables 41". Inspection near Buffalo.

Address G. E. ALLEN
37 Maiden Lane, New York City

USED EQUIPMENT WANTED

WANTED TO BUY

Steel Storage Tanks or Bins
Sturtevant Crushing Rolls
Hummer Screens
Elevators, Belt Bucket Type

Box No. 762, Rock Products, 205 W. Wacker Drive, Chicago, Ill.

WANTED

1¼-yard, three-motor, full electric, gas-electric or Diesel electric Shovel. Must be in good condition. Send complete information and price.

Address Box 761 care of Rock Products, 205 W. Wacker Drive, Chicago, Ill.

WANTED

Four-foot short head type Symons Cone Crusher with fine crushing bowl; and Type C Pennsylvania Size 4 Central Feed Impact Crusher. Give full details, price and location in first letter.

Address Box No. 766, care Rock Products, 205 W. Wacker Drive, Chicago, Illinois.

WANTED TO BUY

One No. 4 or No. 5 Raymond Roll Mill. State location, age and condition.
LEE LIME CORP.

LEE, MASS.

POSITIONS WANTED

WANTED—POSITION AS SUPERINTENDent of Lime Plant or Stone Quarry. Young man, college education, ten years' experience in modern lime plant. Reference on request. Address Box No. 765, Rock Products, 205 W. Wacker Drive, Chicago, Illinois.

WHO CAN USE THIS MAN

42 yrs. old, 20 years' experience building and operating Sand and Gravel Plants. Familiar with all types of equipment. Efficient handling of labor. 10 years with one concern operating plants producing 2,000,000 tons annually. Location immaterial; starting salary secondary.
Address Box 714, care Rock Products, 205 W. Wacker Drive, Chicago, Ill.

Engineer with twenty years' experience in industrial minerals desires to contact a progressive firm interested in increased profits from improved operation and new products that may be developed.

Experience covers mine and quarry studies, plant design and operation for ore dressing and beneficiation of many minerals.

University trained, majored in chemistry and metallurgy. Can study new problems from small scale operation into plant design and stressing economic factors involved. Technical publications and technical sales work.

Address Box 764, Rock Products, 205 W. Wacker Drive, Chicago, Ill.

EXPERIENCED AND SUCCESSFUL LIME salesman desires to make connection with lime Manufacturer with territory in the State of Florida. Now employed by lime producer in Indiana as salesman, which position I have held for the last 7 years. Address Box 755, care of Rock Products, 205 W. Wacker Drive, Chicago, Ill.

POSITION WANTED AS SUPERINTENDent with a progressive stone company. 20 years' experience operating limestone quarries and crushing plants; familiar with all modern equipment; efficient handling of labor with record of low cost of production; qualified to assume full charge of any size plant or plants; unquestionable reference. Open for engagement. Address Box 746, care Rock Products, 205 W. Wacker Dr., Chicago, Ill.

BUSINESS OPPORTUNITIES

LIMESTONE QUARRY
FOR SALE AT SACRIFICE

We have for sale a small quarry with all operating equipment, including Diesel engine as power. Deposit ample for long term operation. Desirably located in Central State. Good local market for both road material and flagstone. Good reason for selling.
Box 767 Care of Rock Products, Chicago, Ill.

SCHOOLS

LEARN MARBLEIZING

Porcelain Enamel Finish. Using our new Vitreous cement, adding water only. Apply over concrete products, wallboard, wood, asbestos board. Make snow white, glossy, shining finish or can be made semi-glossy to flat, velety finish. Colored to suit. Can be troweled, brushed or sprayed to get these finishes. For building trims, bricks, blocks, columns and garden furniture. Casts for novelties, art work, statues, etc. Just wonderful. Send dime for assorted or desired samples.

Address: THE COWELL INSTITUTE, Grayling, Michigan.

POSITIONS VACANT

SALESMAN WANTED

High-grade salesman experienced in selling rock crushers, screening and conveying equipment for both stationary and portable installations. No consideration will be given applicants without above experience. Give full details of previous employment, age, experience, education and salary wanted.
DIAMOND IRON WORKS, INC.
Minneapolis, Minn.

WANTED—CHEMIST WITH CEMENT plant experience for research work. State experience, salary expected and give references. Address Box 760, care of Rock Products, 205 W. Wacker Drive, Chicago, Ill.

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H. J. BROWN
CONSULTING ENGINEER
35 Doane Street, Boston, Massachusetts
Specializing in Gypsum Plants and in the Mining, Quarrying and Manufacture of Gypsum Products.

Consultation	**Design**
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Dealer in PHOSPHATE LANDS and all grades of rock.
10-mesh PHOSPHATE FILLER, $3.00 net ton
40 years' experience TENNESSEE PHOSPHATE FIELD. Correspondence solicited. Can find what you want if it can be found.
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FOR SALE—Complete Crushing Plant—Now Operating Diesel Power

Do you want a first-class plant with actual capacity 50 to 60 tons per hour—mostly new equipment? Now leased to Government and will be available not later than March 1st. Allis-Chalmers Primary Crusher No. 5. Triple deck vibrating screen. New Diesel Engine and air-cooled compressor. New Traylor T. Y. Crusher. 100 ton bin. Elevator. A first-class plant now producing low cost stone. Will be for sale as soon as our lease expires not later than March 1st. Will sell with or without Diesel Power and Compressor.

FRANKLIN LIMESTONE CO., 612 10th Ave. North, Nashville, Tenn.

FOR SALE
Concrete Pipe & Products Plant

Going business, orders ahead; present manager would assist new owner in getting started. Reason for selling, ill health in family.

Address C. H. BREUER
1802 Park Avenue San Jose, Calif.

PARTNER WANTED

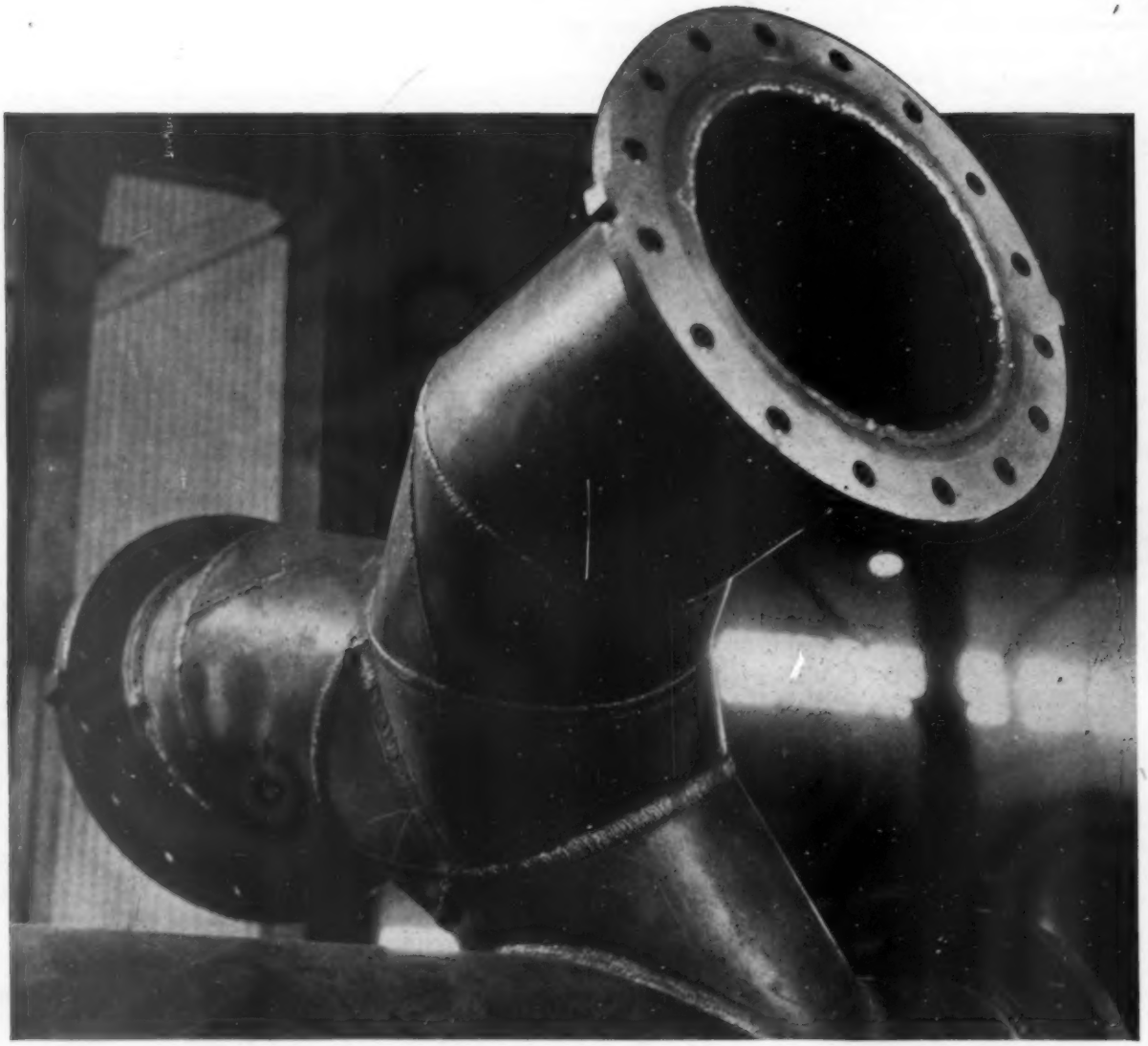
To take charge of my sand lime brick making machinery, and move same to a city of one hundred thousand population, or larger, or to Florida. You to be manager.

W. W. PACE
Albany, Georgia

FOR SALE

Modern chemical lime plant and hydrator. Gas fired vertical kilns. Paper mills nearby.

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PIPE DREAMS COME TRUE

A typical example of Goodrich improvement in rubber

IT looked like a summer cottage in a rain storm . . . In a cotton-seed processing mill, acid-soaked product had to be transported around the plant in wood troughs, because the acid ruined every other material. But even the wood troughs leaked—pails had to be hung here, there and everywhere to catch drips from the leaks, and a maintenance crew was kept busy repairing the system.

Then a plant official heard about the unusual things Goodrich has done with rubber. He sent for an engineer—and his whole problem was solved, by Vulcalock.

Vulcalock is an exclusive Goodrich process of attaching rubber to metal, with an inseparable bond. It was a simple matter to replace the wooden troughs in this mill with steel pipe, rubber lined. Wasteful leaks were stopped, production was increased, repair and replacement became things of the past.

The Goodrich Vulcalock process has hundreds of profitable applications in industry. It has reduced pickling costs in steel mills. Ball mill linings of rubber, attached by Vulcalock, outwear manganese steel. Tank-car linings, rock-products chutes—all made of Goodrich rubber attached by Vulcalock—have outlasted steel or other previous linings as much as 10 to 1.

And Vulcalock is only one of scores of Goodrich developments made for the benefit of industry. Goodrich belting, hose, packing, molded articles, (32,000 rubber items altogether) are better values because of constant research and development in the product improvement laboratories of The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio.

Goodrich

ALL *products problems* IN RUBBER



13 YEARS OLD ..GOIN' ON 14

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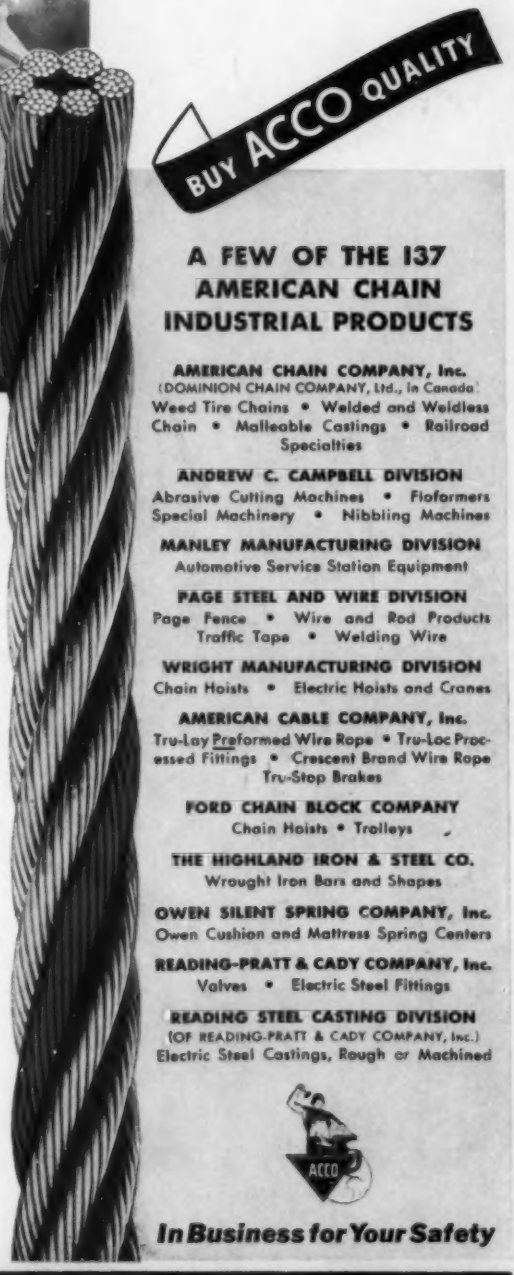
Tru-Lay Preformed Wire Rope was born in 1924. The first year of sales record was 1925. In comparison with that year, Tru-Lay sales were 1700 per cent greater in 1936.

It was the preforming process that commanded this amazing degree of acceptance. Preforming made Tru-Lay a superior rope—so superior that its sales steadily and constantly advanced.

Today Tru-Lay Preformed is the accepted standard of excellence in wire rope for literally thousands of rope users. It has truly amazing resistance to kinking and fatigue. It more capably endures reverse bending—is much easier and far safer to handle. It gives you a more consistent (*and much longer*) service. You, too, will find it pays to specify Tru-Lay Preformed.

The American Cable Company are pioneers in the development and perfection of Preformed Wire Rope.

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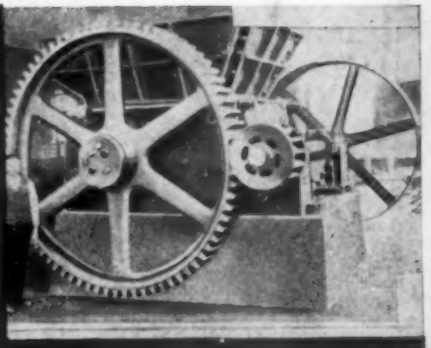
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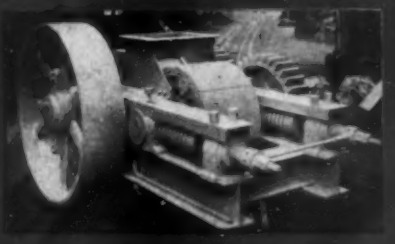
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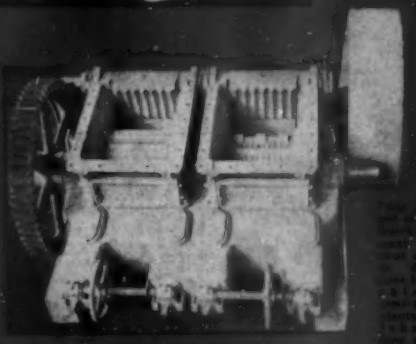


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Study these ruggedly built machines and see how they would fit into your production plans—then write for literature and full details.





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